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SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 143

# HANDBOOK OF SOUTH AMERICAN INDIANS

JULIAN H. STEWARD, *Editor*

## Volume 5

## THE COMPARATIVE ETHNOLOGY OF SOUTH AMERICAN INDIANS

Prepared in Cooperation With the United States Department of State as a Project of the Interdepartmental Committee on Scientific and Cultural Cooperation

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1949

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.
Price $3.00

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# LETTER OF TRANSMITTAL

Smithsonian Institution,
Bureau of American Ethnology,
*Washington, D. C., March 1, 1947.*

Sir: I have the honor to transmit herewith a manuscript entitled "Handbook of South American Indians. Volume 5. The Comparative Ethnology of South American Indians," edited by Julian H. Steward, and to recommend that it be published as a bulletin of the Bureau of American Ethnology.

Very respectfully yours,

M. W. Stirling, *Director.*

Dr. Alexander Wetmore,
*Secretary of the Smithsonian Institution.*

SEP 14 1949

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# FOREWORD

It was originally announced that the Handbook of South American Indians would consist of five volumes, and the proposed contents of each were listed in the editor's introduction in Volume 1. This plan has been followed for the first four volumes, but budgetary considerations have made it necessary to divide the contents of Volume 5, so that a sixth volume will be necessary. This involves no other change in the original plan of the editor beyond a rearrangement of the contents.

References in Volume 5 in the fields of ancient man, physical anthropology, linguistics, and cultural geography will be found in Volume 6.

M. W. Stirling,
*Director, Bureau of*
*American Ethnology.*

# PREFACE[1]

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## By Julian H. Steward

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The first four volumes of the Handbook described the historic and prehistoric Indian cultures by tribes and culture areas. The last two volumes are essentially topical, comparative, and distributional, and each article deals with all of South America. The topical coverage, however, is necessarily incomplete. An article might be written on each of an indefinite number of subjects bearing on the South American Indians. Actually, we have had to limit the choice of subjects to those on which sufficient information was available for summary articles and for which we could find qualified authors. There are obvious regrettable omissions. The Handbook was, however, planned as a summary of existing information which might serve as a springboard for future research. In view of this objective, we feel that most of the subjects included have been covered extremely well and that several articles are distinctive for their originality and for the new problems they suggest.

The articles in Volumes 5 and 6 are not intended as final studies of the respective subjects. Rather, they are summaries of the principal data available at the moment. Large monographs could be and we hope some day will be written on each subject, and these must draw heavily upon the literature, which is pretty well indicated by the present articles. They must also draw upon future research, which is badly needed.

Comparative and synthesizing, the present articles are more theoretical than the essentially descriptive articles of the previous four volumes. A reader of these volumes will find certain differences of opinion, particularly in the historical reconstructions. Some of these differences reflect the insufficiency of present information, but others result from different theoretical assumptions and methodological procedures, especially among scientists who have not been in close touch with one another. It is, consequently, a primary purpose of the Handbook to further international contacts between scientists and to destroy scientific isolationism. Closer contacts will bring mutual understanding, and differences of opinion will quickly decrease. It does not matter who is ultimately proved right. Once scientists fully understand one another's procedures, only those findings which can be fully vindicated by international opinion will gain general acceptance.

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[1] All the articles in this volume were completed in 1945, and some were finished earlier. Now, May 1948, with the volume in proof, one regrets that it is impossible to bring the material up to date, for important research has been done since the war. We can do little more than add some of the more important references to the bibliography.

The cultural articles in Part 1 give comparative and distributional summaries of most of the subjects conventionally covered in ethnography. Most of the comparative studies previously made on South America, especially Nordenskiöld's, concern material culture. This is partly because of interest arising from certain fairly good museum collections, such as those in Sweden. Nordenskiöld's "Comparative Ethnographic Studies" cover some of the present subjects in considerable detail. The present articles differ from Nordenskiöld's, however, first, in attempting a somewhat systematic classification of the subject matter whereas his deal largely with isolated elements, and, second, in incorporating new data. On the whole, however, they supplement rather than supersede his. In addition, Bennett's articles on architecture and engineering deal with major archeological antiquities, which Nordenskiöld largely omitted, and O'Neale's articles on basketry and weaving, Willey's on pottery, Root's on metallurgy, and Métraux's on weapons make far more use than Nordenskiöld of archeological data.

The articles on social and political life are entirely new in their coverage of the whole area. Like the articles on material culture, they necessarily repeat many of the data of previous volumes, but they differ from the articles of those volumes in isolating comparable phenomena pertaining to the different tribes and throwing them into perspective against one another. Social and political organization is divided between Kirchhoff, who deals with the Andes, and Lowie, who treats the Tropical Forest and Marginal tribes. Lowie also has a special article on property. The very interesting and famous South American custom of the couvade and the various rites for adolescent boys are described by Métraux in separate articles. Warfare, cannibalism, and human trophies constitute another article by Métraux.

There are many obvious and regrettable omissions among the articles on material and social culture; for example, dress, boat types, featherwork, stonework, birth and death customs, music, dancing, mythology, and others. These await the future efforts of interested scientists.

The field of esthetic and recreational activities is covered somewhat better than might have been expected. Kroeber's article on South

American Indian art is an outstanding contribution by a master who combines the talents of a first-rate anthropologist with the artist's awareness of style. Rouse's article on petroglyphs is the first to treat South America as a whole. Similarly, Cooper's articles on games and gambling and on stimulants and narcotics are painstaking and pioneering treatments of these subjects for the whole area.

Previous writers have described South American Indian religion, but none in so thorough, detailed, and objective a manner as Métraux in his present article on religion and shamanism.

South American Indian intellectual achievements have usually been described only in terms of the Andes, which were far in advance of the remainder of the area. Bennett's present articles on numbers, measures, weights, and calendars, and on mnemonic and recording devices naturally give prominence to the Andes but place them in the perspective of a comparative summary of all of South America.

Ackerknecht's discussion of medical practices is a highly original analysis of the subject. Although Indian medicine, especially outside the Andes, was postulated on the supernatural efficacy of the various practices, much of it had real physiological value that only a person trained in medicine, such as Ackerknecht, can properly evaluate. This article, however, should be read in conjunction with the portion of Métraux's article which describes shamanism.

The editor had hoped to include in this volume a sketch of the main currents of Old World influence brought to bear upon the Indian after the Conquest, for these influences so fundamentally affected most tribes long before their ethnography was recorded that any cultural studies must take them into account. A thorough ethnography of the 16th-century Iberian Peninsula, which is vitally needed for Americanist studies, still has to be done, however. Also, studies of the effect of other Old World peoples, especially of the Negro, and of special groups, such as the various missionary orders, still have to be made. We had to be content with the important paper by Métraux which forms Part 2, and in which Métraux's analysis of the Jesuit missions gives an excellent idea of the great influence of this highly successful order on the Indian. This article, like all interpretative articles in the Handbook, represents the views of the author and not necessarily those of the Smithsonian Institution or of the United States Government, or any other government.

As there has been no generally available summary of data on aboriginal South American demography, the editor summarizes the information contained in the Handbook and in a few other sources in Part 3.

Finally, because the Handbook has grown to considerable proportions, the editor has undertaken in Part 4 a summary of the data of

Volumes 1 to 6. Such a summary is necessarily interpretative, and the editor takes sole responsibility for its conclusions.

*Glossary.*—As science is international, it is of the utmost importance to establish an unmistakable terminology. Ideally, each term should be clearly defined and its equivalent given in other languages. Practically, this is not feasible, for the vocabulary of science has developed over many years, each term acquiring new shades of meaning as new concepts were developed. There are, however, certain subjects, especially technological ones which lie somewhat outside the scope of anthropology, where the anthropologist must turn to specialists for a proper terminology. The glossary found at the end of this volume lists and defines the more important terms used in the fields of basketry, weaving, ceramics, and metallurgy.

The problem of international intelligibility of terms which pertain to the general field of cultural studies rather than to specialized, technological subjects presents greater difficulties. Terms, such as "clan," are used very differently in North and South America, and even by individual authors. "Folklore" in North America means the folk tales of native peoples; in South America, it means the folk customs and, in some cases, the ethnography, of native peoples. There are, in fact, innumerable words which are far from standardized. It is obviously impossible to establish rigid definitions of anthropological terms, but in the interest of mutual intelligibility of fellow scientists of different nations, the editor has added a glossary of social and religious terms which includes some of the more common English words.

## ACKNOWLEDGMENTS

It is impossible to name the many individuals to whom gratitude is due for advice, assistance, and encouragement during the preparation of the present volume of the Handbook. The authors have given the editors splendid cooperation, and the size of the articles appearing under their names is by no means commensurate with the time and thought required in preparing these articles.

The editor's deepest gratitude is due the Handbook's editorial staff for their unselfish work during the several years of preparation of the six volumes.[2] Dr. Gordon R. Willey, serving as assistant editor, has willingly given of time that might have been spent on more strictly scientific pursuits. Miss Ethelwyn Carter has been the mainstay of the editorial office and carried out the dozens of chores necessary to a work of this kind. Miss M. Helen Palmer, editor of the Bureau of American Ethnology, and Mrs. Eloise B. Edelen, of the Bureau's

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[2] Volume 6, entitled "Physical Anthropology, Linquistics, and Cultural Geography of South American Indians," was sent to press June 1948.

editorial staff, have carried through the tremendous task of final editing and proofreading of this volume and the four preceding volumes.

For supplying the illustrations contained in this volume we are indebted to the following individuals and institutions: Wendell C. Bennett, the American Museum of Natural History, the Academy of Natural Sciences of Philadelphia, the Museum of the American Indian, Heye Foundation, and the Instituto Historico e Geográfico do Rio de Janeiro. Illustrations taken from foreign copyrighted books appear on plates 30, 31, 32, 33, 36, 37, and 55, and on figures 24, 25, 67, and 70 by permission of the Attorney General in the public interest under License No. JA–1230.

Our gratitude must be expressed to the Strategic Index of the Americas, Yale University, and to the Translating Bureau, United States Department of State, for translating several of the articles. The editors translated others of the articles.

# CONTRIBUTORS TO VOLUME 5

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# PART 1. A CROSS-CULTURAL SURVEY OF SOUTH AMERICAN INDIAN TRIBES

## ARCHITECTURE AND ENGINEERING

## HABITATIONS

By WENDELL C. BENNETT

### GENERAL CONSIDERATIONS

Indian habitations in South America vary enormously, not only in form but also in materials, size, durability, and arrangement in village patterns. The major environmental and cultural areas of South America are characterized by a few dominant house types, but in total there are many minor variants, and considerable overlapping of types between regions.

Many factors may influence the types of habitation utilized by any particular group. The local environment is of primary consideration. In the humid Tropics, rain-resisting constructions are advantageous; in the dry Patagonian plains, wind resistance is important; and in the high Andes, protection against the cold is desirable. Since these are comfort rather than survival factors, every house type does not of necessity satisfy these elementary conditions, but in general the influence of the environment is clearly seen. Another important factor is that of the local materials available for habitation construction. In the Amazon, good timber is abundant, as well as a great variety of leaves and grass for thatching, but in the treeless southern Pampas both timber and building stone are lacking. The scarcity of timber in many parts of the Andes is offset by the availability of stone and adobe clay.

The subsistence pattern and the technological skill of a group effect the type of habitation. In general, nomadic hunting and gathering groups utilize temporary shelters, constructed of readily available local materials. Insofar as such groups are dependent on travel by foot, transportability of house materials is of major importance, although this is of less significance when travel is by horseback or canoe. The seminomadic horticulturists, so characteristic of the

Tropical Forest, do not require houses of long-time permanence. In the northwest Amazon, a good frame-constructed house lasts from 3 to 5 years, which is about the maximum period of time that slash-and-burn horticulturists can continue in one locale. The sedentary Andean agriculturists, who are able to cultivate the same land year after year and who show considerable interest in real property, commonly build more permanent habitations.

Borrowing is another cultural factor which effects house types. The inhabitants of such marginal areas as the Chaco, Ecuador, and Central Chile were in a position to borrow many house types from their culturally distinct neighbors. More isolated groups are virtually dependent on their own invention. The pattern of tribal social organization may also affect the habitation. Immense houses are built to accommodate the large extended families with the custom of living in the same shelter. Another common pattern is that of isolated single families, with correspondingly smaller dwellings. Some groups have organized men's clubs and ceremonial associations which, again, call for large buildings. The pacific or hostile relationships between groups may also influence the dwellings. If warfare is common, villages and houses may be located and built in terms of adequate defense and fortification.

The time factor is of considerable importance in a classification of South American house types since many changes have occurred within the historical period and since archeological evidence indicates even greater change in some regions. Many changes can be attributed to European contacts, which have introduced new tools, new patterns, and new necessities. The introduction of the horse on the Pampas made possible the transportation of skin covers for much larger houses. With steel tools, the *Yahgan* of Tierra del Fuego were able to copy the clapboard houses of the Whites. The Neo-Brazilian rancho has had a profound influence on many of the Amazonian groups. European influence also accounts for changes in house details, such as windows, chimneys, and porches. In historical times, the *Goajiro* Indians of Venezuela have turned from agriculture to herding, with a corresponding change in the type of dwelling.

A classification of houses into a number of distinct categories is complicated by the many transitional types and combinations. Furthermore, several distinct house types may be found in the same village. A characteristic house of one group, like the *Yahgan* bee-hive, may be used only as a temporary dwelling elsewhere. Large communal buildings may be built in one technique, small family dwellings in another. The house types of some groups are so mixed and varied that it is difficult to isolate any characteristic one.

In spite of the limitations mentioned above, a rough classification of South American habitations is given here. It would be tempting to arrange some of the categories in a sequence, with the implication that one had developed from another. A sample of such an hypothetical sequence might be: simple windbreak developing into a lean-to, in turn to a double lean-to, to a gabled roof set on the ground, to a rectangular gabled house with side walls. However, it must be noted that present evidence does not verify any such sequence.

Cave dwellings have not been included among the major habitation categories. Some of the earliest archeological remains in southern Patagonia have been found in caves, and the *Yahgan* Indians occasionally utilize caves as temporary shelters. Elsewhere, in the Andes, and even in the West Indies, there is some evidence that caves were used as dwellings. However, since no construction work occurs in any of these, they are omitted from the classification.

The house types are classified in terms of three major categories: pole construction, frame construction, and solid construction. These are admittedly loose categories, and not altogether mutually exclusive. The classification is based on the structural materials which determine the form of the dwelling. These are, in the first group, light poles or saplings; in the second, a framework of posts, rafters, beams, and the like; and in the third, solid walls of stone, adobe, mud, or planks.

## CONSTRUCTION CATEGORIES

### POLE CONSTRUCTION

The types of houses included in this major category employ light poles or saplings as a structural framework, and add branches, skin, woven mats, bark, grass, or leaves as covering material. The finished habitations are usually of small size. Such shelters are typical among nomadic hunting and gathering groups, who find it inconvenient to build more permanent structures, and are not uncommon for temporary dwellings among groups who normally live in frame or solidly constructed houses. The specific types included in this category are described below.

**Windbreak.**—The typical *Ona* dwelling (pl. 1, *top*) consists of two upright poles which support a semicircular cover of guanaco hides, sewn together and painted red. The ground below the inclined skin wall may be slightly scooped out and covered with branches. This shelter, altogether completely open on one side, serves to break the wind, and, more important, to protect the fire. The early *Tehuelche* and *Querandí* are reported to have used a similar dwelling. Poles supporting single mats served as wind-screens for the *Charrua*, and sometimes four such mats were arranged in a square, although without a roof. Similar windbreaks made of bulrush mats served as temporary shelters for many Chaco tribes such as the *Chamacoco*, *Lengua*, *Mbayá*, *Abipón*, *Toba*, *Pilagá*, and *Payaguá*. Even cruder windbreaks have been described, such as the *Mataco* shelter of grass heaped against a row of upright sticks, and the *Nambicuara* construction of palm branches planted in the ground so as to form a half or quarter circle.

**Lean-to.**—A lean-to is in reality a minor variant of a windbreak. The single lean-to consists of palm leaves, branches, or other materials leaned against a horizontal bar which is supported on stakes or tied between two trees. Such simple shelters served as the principal type of habitation for such groups as the *Botocudo* and *Aweikoma* of Southeast Brazil, the nomadic *Purí* of the upper Xingú River, the *Moré* and *Iten* of Mojos-Chiquitos, and the *Sirionó* of eastern Bolivia. The last-mentioned tribe made their lean-tos large enough to accommodate as many as 50 persons. Elsewhere, lean-tos are used as temporary quarters or as sunshades, as, for example, among the *Nambicuara* of the upper Xingú, in the Montaña area, in the Guianas, and among the *Goajiro* of Venezuela.

**Double lean-to.**—Crude constructions, in which the branches or other covering materials were leaned on both sides of a horizontal bar, have been described for the sedentary *Purí* of the upper Xingú, for tribes in the Montaña region, and for the aboriginal *Caingang* of southeast Brazil. From a descriptive point of view, the double lean-to is similar to a common Amazonian house type which has a gabled roof which rests directly on the ground, i. e., without side walls or posts. However, the roof-on-ground house has a framework of heavy timbers and consequently is classified under frame construction.

**Toldo or tent.**—After the introduction of the horse in southern South America, most of the tribes adopted the toldo or skin tent. The *Tehuelche* toldo was typical (pl. 1, *bottom*). The frame consisted of three or more rows of upright stakes diminishing in height from front to rear. These stakes supported a roof and three side walls all made with guanaco or horse skins sewn together. The fourth side was left open, except in bad weather, and a firepit was located in the center front. Skin partitions were used to divide the tent into compartments. Due to the ease of transportation on horseback, some of the tents were of large size, being composed of as many as 40 or 50 guanaco hides.

The toldo was the typical dwelling not only of the *Tehuelche* but of many other Patagonian and plains tribes, such as the *Charrua*, the *Poya*, and the *Puelche*. It is also mentioned for the early *Araucanians* in Chile. There seems little doubt that the toldo was an elaboration of the earlier *Tehuelche* skin windbreak. The *Guayakí* of Paraguay used a type of tent composed of a rectangular or triangular frame of poles tied to trees or supported by forked uprights, and covered with palm leaves or mats. Similar rectangular tents of totora mats are mentioned for the *Aymara.*

**Conical tipi.**—Conical tipis are relatively rare in South America. In southern Tierra del Fuego, where wood is available, the *Ona* make a conical dwelling with a frame of a number of stout saplings arranged in tipi fashion, and a cover of branches, bark, or other material. The floor may be scooped out and covered with branches. Larger tipis are covered with sod, and used for ceremonial centers. The *Yahgan*, in the southern archipelago, make similar shelters. In eastern Brazil the *Timbira* used conical tipis for ceremonial centers and for temporary dwellings. The *Caingang* in northeast Brazil once made a tipi with a central forked pole against which four saplings were leaned, and the whole covered with palms. The interior was quartered by partitions, and each compartment was occupied by one family. Small doorways connected the compartments. The *Guaranoca* of the Chaco used a similar dwelling.

**Beehive.**—The beehive, or domed hut, is the typical dwelling in the Archipelago region of southern South America, and has a wide distribution elsewhere in the south. The *Yahgan* beehive (pl. 1, *center*) has a framework composed of a circle of poles or saplings bent over and tied in the center, and a covering of grass, ferns, branches, bark, or skin. The floor may be scooped out to a depth of 2 or 3 feet, and the single entrance faces the sea. The *Alacaluf* type is oval in ground plan, has two entrances, and no scooped-out floor, but is otherwise of the same construction. Archeological evidence suggests that the *Alacaluf* type is older. Although the average hut is about 8 to 10 feet in diameter and 5 or 6 feet high, both the *Alacaluf* and the *Yahgan* build larger ones for initiation ceremonies.

Circular beehive dwellings are considered an old type for the *Chono* of the Archipelago, the *Charrua* of Uruguay, the *Timbú* of the Paraná Delta, and the *Aweicoma* and *Botocudo* of southeast Brazil. Elliptical beehive dwellings, frequently linked together to form communal-type houses, are characteristic of the *Pilagá*, *Ashlushlay*, and other Chaco tribes of the Pilcomayo and Bermejo Rivers. The huts of the eighteenth century *Guaná* are described as 50 to 65 feet long, 26 feet wide, and 15 to 20 feet high. Beehive dwellings are considered to be an early type in the Guianas. The *Timbira* tribes, the *Shavante*, and the *Pomekamekra* of east Brazil use beehive huts for ceremonies and for temporary shelters, and a similar use is found among such Chaco tribes as the *Sanapaná*, *Angaité*, *Sapuki*, and *Kaskihá.* The *Paumari* build mat-covered beehive huts on their rafts during the wet season. Few measurements are available, although the *Nambicuara* huts range up to 10 to 20 feet in diameter.

**Shades.**—Flat roofs of pole and thatch supported by four corner posts are used as shades by many of the Chaco tribes such as the *Mataco*, *Choroti*, *Ashlushlay*, and *Macá*. Likewise the typical house of the modern *Goajiro* of Venezuela is no more than a flat roof of cactus thatch supported by four corner posts, without walls of any kind.

**Miscellaneous.**—A common house on the Peruvian Coast in *Inca* times is described as a rectangular pole frame with flat roof and wattle-and-daub walls. A somewhat similar dwelling, presumably of Mestizo origin, has substituted rush mats for the walls. It has now been adopted by the *Toba* of the Chaco and by many part-Indian groups of southern Colombia.

## FRAME CONSTRUCTION

The habitations included in this category are composed of a timber frame of beams, rafters, ridge poles, cross bars, posts, and the like, and covered with a thatched roof. Many also have side walls of various materials. Obviously, such habitations are found in regions where timber is abundant. This includes most of the Tropical Forest region, the forest section of southern middle Chile, and much of the Highland and Coastal sections of Ecuador and Colombia.

The roofs are covered with grass thatch, woven mats, or some variety of palm leaves. The side and end walls, where they exist, are composed of branches, cane, palm splints, thatch, wattle-and-daub, or mats. Likewise, combinations of more than one of these materials are employed. The range in size of the buildings is enormous: from small, single family dwellings, to communal structures that will house more than 200 individuals. Today some of the walls are made of more permanent materials, such as clay balls placed between parallel side walls, but in pre-European times, such durable materials were not used. Rarely, a *Chibcha* circular house was outlined with stone uprights and the *Tairona* houses (pl. 2, *bottom*) of Santa Marta in Colombia had carefully cut stone foundations for the walls. In neither case did this stonework serve a major function. Again, a number of types of habitation are included in this category, based on the form of the dwelling.

**Roof-on-ground.**—One type of frame-constructed house is nothing more than a thatched roof resting directly on the ground, i. e., without side walls or posts of any kind. Such a description would also apply to the beehives, conical tipis, and double lean-tos of the previous category. The basic difference is that houses of this category have a timber-frame construction under the thatched roof.

One variety of roof-on-ground house has the external appearance of a large beehive dwelling. However, it has a central post, from the base of which forked poles slant obliquely to support the bent rods of the external frame. Among the central and western *Nambicuara*, such houses are as much as 100 feet in perimeter, and, among the Guaporé River tribes, they are large enough to accommodate over 100 occupants. Other houses resemble, superficially, the elongated beehive dwelling, but contain an internal framework of ridge poles, rafters, and forked side poles. These are found among the northern *Cayapó* and among such Chaco tribes as the *Pilagá*, *Toba*, *Macá*, and *Ashlushlay*, where, indeed, the building may be intended to imitate the more common true beehive hut.

The roof-on-ground house type includes a double lean-to style with side rafters leaned against a central raised ridge pole from both sides. In its simplest form, this house is used as a temporary camp among the *Guató*, and as a standard dwelling among the *Moré*, *Iten*, and *Huanyam* of the Mojos-Chiquitos region. A more elaborate type of the double lean-to has the roof bolstered by internal frame supports. Such houses are found among the *Carajá* in east Brazil, among the eastern *Carib* of the Guianas, and in ultimate elaboration among the *Tupinamba.* The houses of the last-mentioned group are rectangular in ground plan, vaulted, and have flat ends. They are described as 500 feet in length, 50 feet in width, and 12 feet in height, and were able to accommodate as many as 200 inhabitants. The *Paressí* have a similar house, but with arched ends.

The rectangular dwellings with gabled roofs have a wide distribution. A list of some of the major occurrences includes: The *Chiriguano;* such north Chaco tribes as the *Sanapaná*, *Kaskihá*, *Guaná*, *Mbayá*, and *Guaicurú;* the *Churapa*, *Mojo*, *Moré*, and *Huanyam* of the Mojos-Chiquitos region; various tribes of the southern Amazon region which have adopted this type recently, such as the *Guató*, *Purí*, and *Timbira* of Brazil; the *Yuruna*, *Shipaya*, and *Tacunyapé* of the Lower Xingú; most of the *Guaraní* group, including the upper Amazonian *Cocama;* the *Cashinawa* of the Juruá-Purús-River area; the *Coto* and *Sioní* of the western *Tucano;* some tribes of northwest Amazonas; the *Barama* and other *Carib* of the Guianas, as well as the more primitive *Warrau;* the *Cuna* of Panamá; the *Chibcha* of Colombia; the *Panzaleo* and *Cañari* of Ecuador; the *Araucanians* of Chile; and the *Arawak* of the West Indies.

As illustrations of the oval ground plan houses with gabled roofs, the following can be cited: The *Cumaná* and *Paressí* of the Mojos-Chiquitos region; the *Curaya* and *Shipaya* of the the lower Xingú; many of the upper Xingú tribes; the *Tucuna;* the *Ipurina* of Juruá-Purús; and the *Witoto* and *Jívaro* of the northwest Amazon.

True gabled roofs resting directly on the ground are described as the wet-season house of the *Bororo*, as one type among the *Guató* of east Brazil, and as a standard type for the *Yuruna* and *Asuriní* of the lower Xingú. They are common among the *Guaraní*, and, in a rounded-end variation, among the *Ipurina* of the Juruá-Purús River region, and among the *Carib* of the West Indies. Finally, the dry-season house of the *Bororo* is essentially a roof-on-ground of the conical type, composed of a central post with side beams leaned against it and a palm thatch roof.

**Rectangular or oval with gabled roof.**—The basic features of this house type are a rectangular ground plan and a gabled roof supported by a central ridge pole and by secondary posts and cross bars resting on side-wall posts. The side walls are closed in some, open in others, but the basic shape is not affected. The oval form is a variant achieved by bowing out the ends of the central rectangle. Houses with a square ground plan are found among the *Tupí-Cawahíb*. Some gabled-roof houses are small, i. e., large enough to accommodate a single family, and present little elaboration on the simple rectangular form. These are the contemporary houses of the *Jívaro* (pl. 2, *top*), the commonest dwellings of the *Chiriguano*, and not uncommon among some of the Guiana groups. Other gabled houses are large enough to accommodate many families, and are frequently referred to by the name "maloca." The larger houses commonly have a door at each end, one for the men and guests, the other for the women. The thatched roof may extend beyond the side walls, almost to the ground, or it may be raised so as to form a verandah along one or more sides of the house.

**Circular and conical roof.**—All houses in this division have the same form, namely, circular perpendicular side walls, and cone-shaped roofs, but there are several construction subtypes. The simplest building has a circle of side-wall uprights on which the roofing beams are placed so as to meet at an apex, but without center pole. Such houses are reported for the *Arawak* of the West Indies, and for the *Chocó* of Colombia. A house of similar construction, but with a center pole for additional support, is found among the *Mojo*, the *Chibcha*, and *Tairona* of Colombia. As previously mentioned, the *Tairona* houses are characterized by a single or double ring of dressed stones for a foundation, and in *Chibcha* dwellings the outer ring of uprights was sometimes reinforced with stone columns. In larger houses an additional circle of upright posts to support the rafters is placed between the side-wall posts and the center pole. This is found principally in the Guianas among the *Arecuna*, *Taulipáng*, *Wapishana*, and *Macushí*. Still another type of construction is similar to the last mentioned, but lacks a center pole. Even so, this technique is used in constructing some of the largest conical-roof dwellings in South America. For example, the *Yamamadidí* and *Mangerona* of the Juruá-Purús River region build houses as much as 130 feet in diameter and 70 feet high, without a center pole. Such dwellings accommodate as many as 250 individuals.

Other conical-roof dwellings for which the details of construction are not clearly known are attributed to the *Lile*, *Poso*, and *Cueva* of Colombia; the *Cara*, *Panzaleo*, and *Cañari* of Eucador; some of the tribes in the lower Apáporis of the northwest Amazon; and the *Custenau* on the upper Xingú. As in all frame houses, the walls may be finished off with wattle-and-daub, thatch, mats, latticework, poles, and the like, or may be left open. Among the *Chocó* and the *Cueva* of Colombia the apex of the conical roof is sometimes capped with a clay vessel.

**Square and four-sided roof.**—A single family dwelling with square floor plan and four-sided roof is mentioned for the northwest Amazon.

### SOLID CONSTRUCTION

Houses with walls of solid construction are, in general, characteristic of the central Andean region, with extensions into Ecuador to the north and Northwest Argentina and Chile to the south. Elsewhere clay huts with thatched roofs are mentioned for the *Cariri* and *Shavante* of east Brazil, but no details are given. The house types included in this category all have walls constructed of solid materials, although house shapes and details of construction vary considerably.

The principal materials employed in constructing the house walls are mud or clay, stone, and wood. Walls are made of mud turf, but adobes of tempered, sun-baked clay are more common. Adobes are shaped by hand or mold into many forms, including conical, bread loaf, hemispherical, ball, rectangular, and square. Common use is also made of the so-called "puddled" adobe, in which prepared clay is tamped between two temporary board walls which are later removed. Stone walls are of rough boulders, of split and selected stone, of dressed-stone blocks, of slabs, and of pirca, i. e., rough stone set in clay. Wooden beams and logs supplement the other materials, but the only all-wooden wall construction included in this category are the plank houses of the *Araucanians.* Although the walls are of solid construction, the roofs of the houses are commonly the pole and thatch used elsewhere in South America. However, roofing materials of stone or mud or combinations of these are also employed. Roofs may be flat, pent, gabled, conical, or domed.

If all of the archeological periods were considered, the number of house types in this category would be enormous. For the sake of simplicity, the houses are grouped into four general types. The first two are based on the shape of the building, i. e., rectangular or round; the third includes all houses simply described as subterranean; and the fourth covers edifices of two or more stories.

**Rectangular.**—The rectangular ground plan is by far the commonest in the solid-construction category, both in the archeological past and at the present time. Such houses rarely have more than one room, although two- to four-room constructions are known archeologically. The walls are generally 30 to 50 cm. thick and from 1½ to 2 m. high. All of the standard materials are employed in wall construction, such as adobe, sod, stone, stone set in mortar, and plank. Archeologically, this house type has been found in the Tungurahua, Chimborazo, and Manabí Provinces of Ecuador; in most of the regions and periods of Perú and Bolivia; in the *Atacameño* and *Diaguita* Periods of Chile and northwest Argentina; and in the *Araucanian* Period of central Chile. It is still the standard house type of the modern *Araucanians*, *Quechua* (pl. 3, *top*), and *Aymara.*

Subdivision of the rectangular house type could be based on the roof shapes. A gabled roof is constructed with beams and poles and thatched with such materials as totora (reeds), grass, mats, and leaves. It is the typical roof of the modern *Quechua* and *Aymara* houses; is described as the standard type in the *Inca* Period at the time of the Conquest; and it is found archeologically as far back as the Mochica Period in Perú (fig. 1), and the *Atacameño* Period in North Chile. A four-sided or trapezoidal roof of beams and thatch is built by the modern *Quechua* and *Aymara.* A flat roof, of cross beams, reeds, and mud, occurs in some of the past periods of Perú and to the south in the *Atacameño*, *Diaguita*, and Humahuaca Periods. Flat roofs of stone slabs are found in the north Highlands of Perú, commonly with dirt heaped above them. Pent roofs of beams, reeds, and thatch are repre-

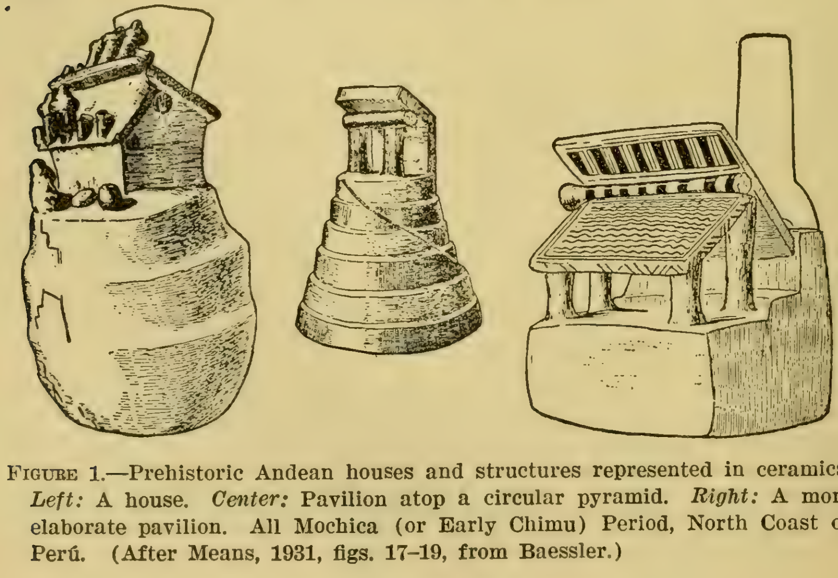


FIGURE 1.—Prehistoric Andean houses and structures represented in ceramics. *Left:* A house. *Center:* Pavilion atop a circular pyramid. *Right:* A more elaborate pavilion. All Mochica (or Early Chimu) Period, North Coast of Perú. (After Means, 1931, figs. 17–19, from Baessler.)

sented in the *Atacameño* area. A corbeled roof made of sod is still used by the *Aymara*, and the *Inca* made corbeled roofs of stone. Ancient houses in the north Highlands of Perú had a unique type of stone roof made with a crossbeam of stone from which shorter beams extended to the side walls. Mud was then piled on top. Still another type had a high central wall which served as a ridge pole to support a gabled roof made of stone slabs.

**Round.**—Houses with solid cylindrical walls are rare but have been found in some of the archeological periods of Ecuador and Perú. The modern *Aymara* build a circular house with a pirca-and-sod wall, and a conical thatched roof. The typical house of the *Uru-Chipaya* has a cylindrical wall of mud blocks and a dome-shaped roof of pole and thatch.

**Subterranean.**—Subterranean houses characterize some of the north Highland archeological periods of Perú (fig. 2). Such houses have walls lined with upright slabs, and chinked with smaller stones. The roofs are great covering slabs. There is considerable variety in form, such as the elongated gallery room, the single chamber, a house with one central room and a number of connecting side niches or smaller rooms, and even a type with two floors below ground. Outside of the north Highlands, single subterranean rooms made of dressed-stone blocks are found in the Tiahuanaco Period in Bolivia.

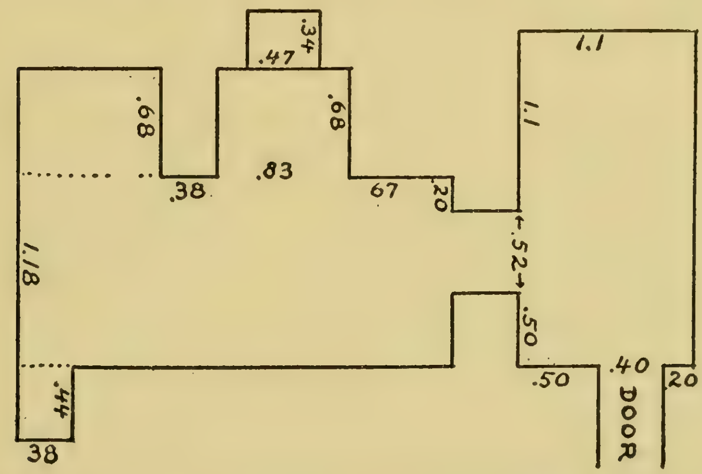


FIGURE 2.—Ground plan of prehistoric subterranean house at Katak, Recuay. (Dates from the Central Andean Early Periods.) (After Bennett, 1944, fig. 23.)

**Two or more stories.**—Houses with two or more stories are found archeologically in the Peruvian region. The *Inca* enlarged some of their rectangular houses into two- and sometimes three-storied edifices.

Likewise, in the north Highland pre-*Inca* period are houses, quite possibly temples, of two and three stories. These are of large size, but there are others of more modest dimensions which seem to have been used as dwellings. In all of these, the roofs are of great stone slabs, so that the ceiling of one room forms the floor of the one above.

## AREA HABITATION PATTERNS

The Indian cultures of South America can be described in terms of three dominant subsistence patterns, namely, the nomadic hunters and gatherers, the seminomadic horticulturists, and the sedentary horticulturists. These three subsistence patterns correspond roughly to major geographic divisions of the continent. The distribution of specific house types has been briefly discussed in the previous pages, and certain correlations with these three subsistence patterns have been noted. The following section treats the over-all habitation patterns in terms of these three major divisions.

### NOMADIC HUNTERS AND GATHERERS

The territory of the nomadic hunters and gatherers is largely in the southern part of South America, including such areas as the Archipelago of Chile, the island of Tierra del Fuego, the plains of Patagonia, the Pampas of Argentina and Uruguay, and more dubiously, the eastern Highlands of Brazil. The Brazilian region may once have been occupied more extensively by hunters and gatherers, but for a long time agriculture has been practiced and frequent contacts with the Amazonian neighbors has effected many changes. The area of the Gran Chaco is marginal between the nomadic hunters and the seminomadic horticulturists of the Amazon Basin.

If the Chaco and Brazilian areas are excluded, the aboriginal nomadic hunters of southern South America had no standard village pattern. In general, camps were composed of from one to three families, any larger number assembling together only on special occasions. In Patagonia and Tierra del Fuego, camp sites were selected which had natural protection from the wind and which were relatively near drinking water. In the Archipelago, the rare beaches served as camp sites. When several shelters were erected in the same camp, no formal arrangement of huts was followed. So long as a hunting group stayed within its prescribed territory, there was little danger of warfare, and, consequently, protection of sites was not a major consideration. The house types of the simple hunting groups all fall into the pole-construction category, such as windbreaks, lean-tos, conical tipis, and beehive huts. Following the introduction of the horse, the toldo, or tent, replaced the simpler dwellings, and larger groups were able to assemble in camps. Some of the regular camps are described as consisting of 20 or more toldos.

The houses of the nomadic hunters have no outstanding special features. Minor features are the scooped-out, branch-covered floors of the *Ona* and *Yahgan* houses, and the skin partitions of the more elaborate Patagonian toldos.

The aboriginal house types of the east Brazil area are difficult to determine because of the extensive modification and borrowing that has taken place. The southern *Ge* and the *Botocudo* still use pole-constructed shelters, such as windbreaks, lean-tos, double lean-tos, and elongated beehives. Among the Northern and Western *Ge*, conical tipis and beehive huts are still used for ceremonial centers and temporary dwellings, but the larger, village houses are frame constructions of the roof-on-ground or the rectangular gabled type. The latter may well have been borrowed from the *Tupí* or Neo-Brazilian neighbors. Houses have few special features. Mat partitions are used to curtain off the raised sleeping platforms of the young girls. Separate cook houses are not used, but underground ovens are a common association.

The southern *Ge* live in small village clusters of five to eight huts, usually hidden in the forest, away from the streams, for protection against the *Tupí* neighbors. Elsewhere in east Brazil, villages consist of about 30 houses characteristically arranged in a formal spatial pattern. A common pattern is a circle of extended family dwellings which surrounds a central plaza in which a bachelors' hut or men's club is located (fig. 3). In some villages the circle is broken, forming a semicircle or a horseshoe pattern, but the central plaza is not lost. The *Shambioá Carajá* villages are arranged in regular rows of houses along streets. One *Shavante* village has 30 houses aligned in a single row. The villages in east Brazil are located near water and near the gallery forest, best suitable to the local agriculture. Some seasonal shift of villages occurs due to inundation in some cases and to economic necessity in others.

The habitations of the Chaco reflect the marginal position. Simple, pole-constructed windbreaks, lean-tos, and beehive dwellings are in common use for temporary camps. The typical house for most of the Chaco is a pole-constructed beehive extended into a long communal house. In the northern Chaco, a rectangular, gabled-roof house with open side walls has been borrowed from the Amazonian tribes.

Chaco villages are located in respect to water and food supply, pasturage, and security against enemies. The edge of the bush country is considered the best for safety. Where local conditions permit, villages are of fair size, and are composed of a number of communal houses. These are commonly arranged around a rectangular or square

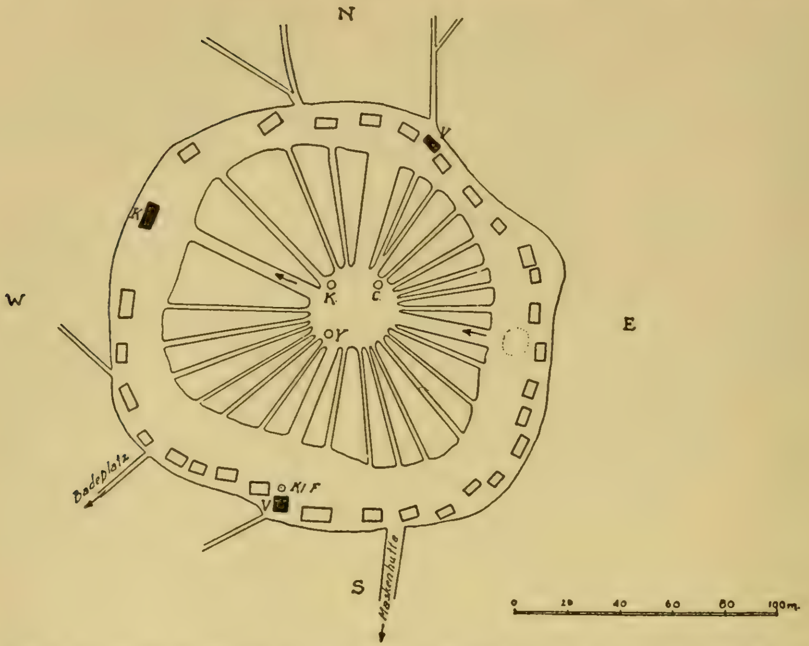


Figure 3.—*Apinayé* village plan. (After Nimuendajú and Lowie, 1937, fig. 2.)

plaza. Others conform to a circular or horseshoe plan, and still others are alignments of regular rows of houses along streets. The screen-protected entry, like a porch or a vestibule, is a unique feature of the houses of the Pilcomayo-Bermejo tribes.

The *Araucanians*, after the introduction of the horse, moved across the mountains from Chile and became nomadic hunters. They adopted in most cases the village and habitation pattern of other hunters in the Pampas-Patagonia region. The Chilean *Araucanians* of today, however, pertain to the sedentary or seminomadic-horticultural pattern.

### SEMINOMADIC HORTICULTURISTS

In large sections of South America, the people cultivate in the slash-and-burn, or milpa, technique. The forest cover is cut down and burned over, and the planting is done in the softened soil and ashes. A field so prepared can be used for several seasons, but after a time the available agricultural land in the immediate vicinity of a village becomes exhausted, and the inhabitants are forced to move. In most forest tribes, hunting is important. At least, hunting and warfare are major occupations for the men, while the cultivation is left largely to the women. Consequently, if the game supply of an area diminishes, the village is moved to a new section. Villages are shifted at the death of a house chief, or because enemies threaten the position, or even because a new region might be more favorable for trade contacts. As a result, the subsistence pattern is described as seminomadic horticulture, since, for one reason or another, the villages are moved every few years. This general pattern is followed in most of the Tropical Forest area of South America, in the Amazon Basin, in the upper La Plata drainage, along the Orinoco, along the east coast of Brazil, through the Guianas, throughout most of Venezuela, in the West Indies, and in a large part of the tropical and highland areas of Ecuador and Colombia. To a certain extent the *Araucanians* in central Chile could also be included. However, the following generalizations, unless specifically stated otherwise, refer to the tribes in the Tropical Forest area.

Throughout most of the Tropical Forest region, the houses are of frame construction. Timber is readily available, as well as a great variety of thatching materials. Some types of pole-constructed houses, such as lean-tos and shades, are used either as temporary dwellings or minor buildings within the village. Only those "underlying" groups which still maintain a basic hunting economy in the Amazon region, such as the *Yaruro*, *Shirianá*, *Macú*, *Sirionó*, and *Trumaí*, use pole constructions as their major type of dwelling. Today even these groups have borrowed more permanent types of dwellings from the other peoples of the Amazon.

Each of the three major types of frame-constructed houses is widely distributed throughout the Tropical Forest. The roof-on-ground types occur most frequently south of the Amazon, along the Atlantic Coast of Brazil, among the eastern *Carib* of Guiana, and up through the West Indies. The rectangular-gabled houses have a wide distribution south of the Amazon, in the upper Amazon, in the Montaña, and in the Guianas. The round houses with conical roofs are generally found in the northwest part of the region, extending into Panamá and the highlands of Colombia and Ecuador. However, these, too, are found in the upper Amazon, in the Guianas, and in the West Indies.

Tropical Forest villages range in population from 20 to around 2,000 individuals, although 50 or 60 seems fairly average. A village location is in terms of fields, game, water, and protection. High ground is generally sought to avoid floods. Protection from enemies is one of the major factors considered, with the result that some villages are situated as much as 2 miles back from the rivers, with the paths leading to them carefully concealed. Other groups, like the *Yuruna* of the lower Xingú, actually build their villages on the rocky islets of the rapids for greater protection. The factor of defense influences the village pattern in many ways. For example, the *Shipaya* of the lower

Xingú deliberately have the houses scattered about for greater protection.

There are several distinct village patterns, but there seems to be no correlation between house types and specific village pattern. The so-called barnyard or irregular arrangement of houses in a village is common in the Guianas, along the Xingú, and in eastern Bolivia (fig. 4). Such villages may be composed of several large communal houses or from 20 to 400 single-family houses. Another village plan has from 3 to 8 communal houses around a square or rectangular plaza. This is common for the *Guaraní* and *Tupí* tribes, and is also found in eastern Bolivia. The circle of houses around a plaza is relatively rare, but is mentioned for the *Tupí-Cawahíb* and *Nahukwa* along the Xingú. A village composed of a single row of houses along a river bank is reported for the *Omagua* of the upper Amazon; and villages with the

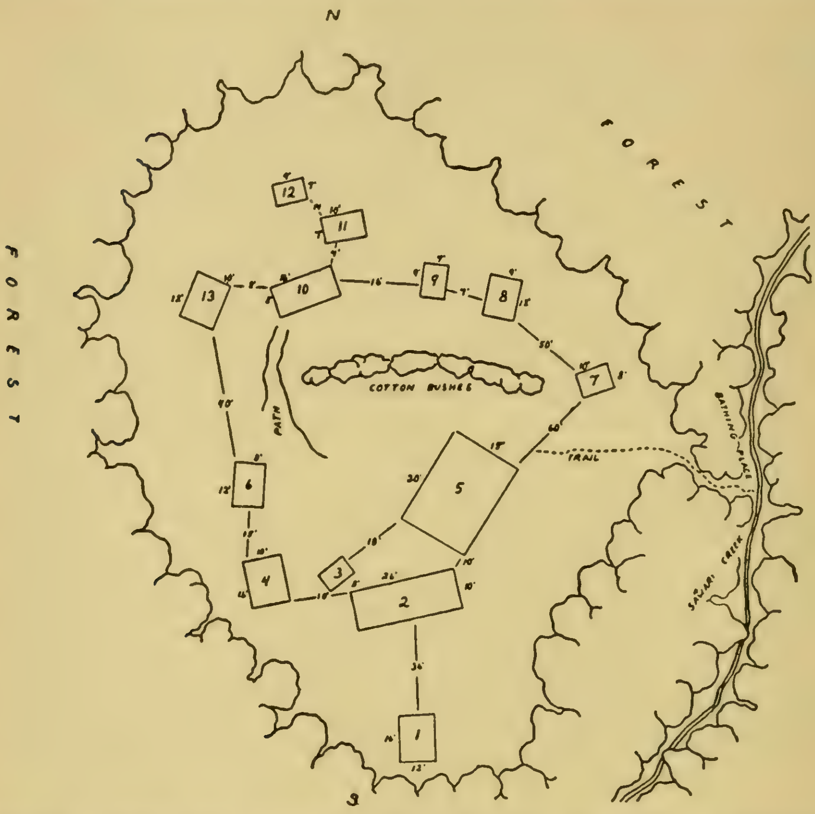


FIGURE 4.—Sketch plan of Barama *Carib* settlement. Number 5 is headman's house; number 2 is a storehouse; numbers 3 and 9 are "drink houses"; and the remainder are various residences. (After Gillin, 1936, fig. 10.)

houses along streets are described for the *Cuna* of Panamá and the *Manasí* of the Mojos-Chiquitos. The village pattern, in which a single, large, communal house forms the entire village is quite common in the northwest Amazon, although it may be modified slightly by adding several single-family houses.

Most of the large communal houses contain a central interior section for public and ceremonial purposes, and divide off other sections of the interior for the use of the component families, but actual partitions are rare. The loft formed by the gabled-roof beams and rafters is used as a storage space. Furthermore, constructed storage platforms are a feature of many of the houses. These rest on the rafters, are hung from the rafters, or are supported on posts. Small buildings for special uses are usually found in the villages. Simple shades, away from the dwelling, are used as cook houses. Small workshops, separated from the main building, are mentioned for the *Moré* of the Mojos-Chiquitos region. Some tribes of the upper Xingú build small guest houses, which are also used for storing costumes and musical instruments, and thus are sometimes called "flute houses." With the introduction of domestic fowl, hen houses are now built. Special houses for storage are not common, but are found in some of the villages. Protection from mosquitos and other insects is an important problem and is met in many ways: by screening up the dwelling so that it is virtually insect-proof; by building smudges or slow fires under the hammocks; by sleeping buried in the sand; by the use of mosquito nets, either ancient or modern. However, some groups build special small sleeping cabins, tightly sealed as protection against these pests.

In the West Indies, house types and village patterns reflect *Arawak* and *Carib* difference. The *Arawak* build family-size, circular houses with conical roofs or rectangular houses with gabled roofs. These are arranged in an informal pattern around a central plaza which contains a ball court. The *Carib* village has a communal men's house, of a roof-on-ground type, around which are scattered the smaller houses for the women and individual families.

The *Goajiro* of Venezuela have adopted cattle- and sheep-herding economy in post-European times, and thus have become nomadic wanderers. As a result, the village pattern is one of camps, characterized by temporary shelters in the form of shades or lean-tos.

The Coast and Highland peoples of Colombia and Ecuador, although overlapping, in part, the region of the sedentary agriculturists, still built houses of the rectangular gable and the circular with conical roof types. Most villages followed a scatter pattern of irregularly placed houses, although the *Chibcha* grouped a number of houses in a large compound. The *Araucanians*, too, conform to this same village and house pattern to a large extent, although under *Inca* influence and perhaps before, the houses were built of more permanent materials.

In many parts of the Tropical Forest, large men's houses, bachelors' huts, and ceremonial buildings are important parts of the village. These public buildings, however, will be described in the article entitled "Religious Structures."

### SEDENTARY HORTICULTURISTS

The Indian peoples whose subsistence is basically devoted to horticulture and who are able to utilize the same land over long periods of time, are found only in parts of the Andean region. Included as sedentary horticulturists are the *Chibcha* of Colombia, and virtually all groups in the Highlands of Ecuador, the Highlands and Coast of Perú, the Highlands of Bolivia, in Northwest Argentina, and the valleys of North and Central Chile.

With the exception of the *Chibcha* in Colombia, most of the sedentary agriculturists utilized houses of solid construction, at least at the time of the European conquest. More perishable houses seem typical of Ecuador in pre-*Inca* times; and the same may also be true of the *Araucanians.* The types of houses included in the category of solid construction have already been mentioned and the distribution discussed, so no repetition is needed.

Houses are commonly arranged in wall-enclosed compounds, which contain a patio, one or more large houses, a kitchen, corral, storehouse, and the like. This is the modern pattern of the *Quechua*, *Aymara*, and *Uro*, and was true of the *Inca* in the past. Such compounds are commonly arranged in villages, the location of which is generally on a slope or rocky outcrop unsuitable for cultivation. The villages themselves were rarely fortified, but a special fort or place of refuge was located on a peak not too far away.

The village patterns today are not very different from those of the past. One type is the nuclear village, composed of a number of house compounds, irregularly arranged around a central plaza and the church. Such villages are common among the modern *Quechua*, *Aymara*, and *Uru*, and in the past were made by the *Inca*, *Atacama*, *Diaguita*, Mochica, Ica, Cara, *Chibcha*, and *Tairona.* Another village pattern is the dispersed or open community, where the house compounds are scattered over quite an area. This is particularly characteristic of the modern *Quechua* and *Aymara* who live in the higher altitudes. It was once a common pattern in Colombia and Ecuador as well. Although Indian house compounds are found in towns today, such town patterns are European derived. However, in the past, organized towns approaching city proportions were built by the *Inca* and pre-*Inca* peoples of Perú, and the *Diaguita* of northwest Argentina.

The houses of the sedentary agriculturists generally contain only one room, without partitions. The compound is occupied by an extended family, but usually a house is occupied only by a single family. The houses have pounded clay floors; clay-plastered walls; doorways of wood, rawhide, or woven blankets; stone shelves projecting from the walls; pegs in the walls for hanging various items; and inset wall storage niches. Storage bins may be built in one corner or outside of the house. Windows are still rare in spite of a few pre-Spanish examples in *Inca* buildings. Additional constructions associated with houses are common, and include corrals, cook houses, pens, shelters for guarding the fields, and small shrines.

Again in this region, a distinction is made, particularly in reference to the past, between private dwellings and public or ceremonial buildings. The latter are described in another section.

## MISCELLANEOUS CONSIDERATIONS

### HOUSE BUILDERS

Among most of the Southern Hunters, and elsewhere in other groups using pole-constructed habitations, the task of building is left to the women. This is true of the Archipelago, Tierra del Fuego, the Pampas, Patagonia, East Brazil, and most of the Chaco. Frame-constructed houses are almost always erected by the men of the village working together, although the women may assist in thatching and the like. In the Andean region again, the houses of solid construction are built by men working collectively.

### FORTIFICATION

The southern hunting groups paid no attention to fortifying their camps and villages. Likewise, in many parts of the Tropical Forest the villages were carefully concealed rather than formally protected. However, fortified villages were built by the *Tupinamba*, some *Guaraní* groups, several tribes of the Venezuelan and Colombian Amazon region, the *Chiriguano*, *Tupí-Cawahíb*, many tribes in Paraguay, and a few groups in the Guianas. Fortification consisted of building stockades or palisades of upright posts around the villages, digging protective moats and ditches, and planting pointed and poisoned spikes along the paths. The *Chibcha* used palisades and built platforms, like crows' nests on high posts for the defenders. The *Araucanians* may have used palisades. In the area of the sedentary horticulturists, the villages were rarely fortified. Instead, special forts were built on high peaks as places of refuge and defense. These forts were surrounded by concentric defense walls pierced with loopholes, and utilized bastions. Many houses were built in these fortifications, not only to maintain the garrison but also to house the populace in times of stress.

### ORNAMENTATION

Nowhere in South America was any great attention paid to house decoration. The *Ona* and some of the tribes of Patagonia painted the skin covers of their windbreaks with a red pigment. The *Tupí-Cawahíb*, south of the Amazon, are said to have painted the outer walls of their houses with red figures of jaguars, dogs, eagles, snakes, frogs, children, and moons. Likewise, the *Rucuyen*, *Apalai*, and *Macushí* of Guiana painted some designs on house posts and walls. Elsewhere in lowland South America, no mention is made of house ornamentation.

In the Andes, large temples and public buildings were ornamented. Reconstruction of ancient houses indicate that pictorial designs on exterior walls were common, but in the *Inca* Period the only decoration on private homes consisted of small relief or painted animals on the door jambs and lintels. Some houses were coated with clay plaster and painted in solid colors. The modern *Quechua* and *Aymara* carve the wooden door lintels with animals, and frequently place a crucifix, a llama, a bird, or the like on the roof of the house, more for protection than for ornament.

### PILE DWELLINGS

No mention has been made of pile dwellings as a particular type of house, since the raising of houses on posts occurs only in those areas which are swampy or apt to flood. Pile dwellings are reported for many sections on the Venezuelan coast and around Lake Valencia. The *Cuna* and *Chocó* of the Panamá-Colombia lowlands also placed their houses on piles, as did the *Warrau* at the Orinoco Delta. Some houses in Cuba were raised on piles. In the Amazon region, pile dwellings are mentioned for the *Tucuna*, in upper Amazonia.

# HOUSEHOLD FURNITURE

### By Wendell C. Bennett

In a discussion of furniture, it is often difficult to distinguish the items included under this topic from the rest of the material culture of an Indian tribe. In this review, the items considered as furniture are those which belong essentially to the house and its use, rather than to other activities of the culture.

Under the topic of habitations, some special house features were described in terms of the major areas of South America. These overlap, to a certain extent, the category of house furniture. For example, the use of house lofts for storage, special storage platforms, wall niches, shelves, projecting pegs, and bins or compartments within the house—might all be called either "furnishings" or "house features." Furthermore, many Indian villages have small houses or sheds associated with the principal dwelling. These smaller constructions are used for storage, cooking, and the like, and consequently fulfill some of the functions served by furniture in other cultures.

The following discussion starts with a brief summary of household equipment and furniture by major areas, and continues with a more detailed description of the principal items of furniture and their distribution.

## AREA SUMMARIES

The Southern Hunters of the Archipelago, the island of Tierra del Fuego, the Patagonia and the Pampas regions, have little that can properly be called house furniture. A fire bed is an important part of every shelter, but there are no prepared fireplaces or stoves. Floors are commonly covered with branches. For sleeping, mats of brush, skin, or plaited material, are spread on the ground. Around the habitations one finds such miscellaneous equipment as hunting weapons, simple split-stick fire tongs, grease stones, whetstones, scrapers, awls, and a variety of skin bags, some for storage, some for water containers. In the *Yahgan* camp other items are found, including seal bladders for oil containers, bark buckets, baskets, special bark-peeling wedges, and shell scrapers. The tribes of the Pampas and Patagonia add pottery, stone mortars for grinding seeds, wooden objects, and, in post-European times, a great variety of horse trappings.

In east Brazil, a raised platform bed is common. The houses may also contain stone baking slabs, wooden clubs, sword clubs, other weapons, baskets, calabashes, gourds, bamboo containers, bark bags, and various types of ceremonial equipment. The Chaco houses usually have pottery, skin bags, weapons of various kinds, fire tongs, skin and plaited sleeping mats, and a variety of wooden bowls and spoons. Also prominent in the Chaco are such Amazonian features as manioc equipment, wooden mortars and pestles, and fire fans.

Some of the typical items of furniture in the Amazon region are platform beds, hammocks, carved wooden stools, storage baskets, fire fans, manioc equipment, wooden mortars and pestles. The standard household also has pottery vessels, many wooden objects, baskets of various shapes and sizes, looms, woven pieces of cloth, gourds, and calabashes. Ceremonial equipment may also be kept around the house, such as feather costumes, bark cloth, and various musical instruments. The houses usually have fish, meat, and vegetable foods stored or hung around the interior of the houses.

Solid platform beds, clay cooking stoves, and grindstones are standard furnishings in the Andean region. Most houses also contain quite a variety of manufactured objects: ceramics, cloth, calabashes, woodwork, and metalwork. Both blankets and skins are used as sleeping mats. Ceremonial equipment may be found in the house, but it is usually stored in a separate building. The *Araucanians* of Chile differ from other Andean groups in the variety of wooden objects found around their houses.

Even in so brief a summary, it is obvious that none of the South American Indian habitations contains much furniture. In recent years some European furniture has been introduced, such as tables, chairs, and frame beds, but in general, even these have not been widely accepted by the Indian groups. The archeological evidence shows that the Indian houses of today have little more furniture than they did in the past. In the following pages some of the outstanding articles of furniture are described in more detail. However, most of the common articles found around the households are described elsewhere, under the topics which cover the various crafts.

## ARTICLES OF FURNITURE

**Sleeping mats and blankets.**—The simplest beds found in South America consist of branches or brush mats laid directly on the ground. These are found among the *Caingang*, *Gorotire*, and *Botocudo* of east Brazil; among the *Nambicuara;* and among all of the southern hunting groups. The use of untanned skins for sleeping mats and for blankets is also found among most of the hunting groups, including the *Bororo*, *Caingang*, and *Botocudo* of Brazil; most tribes of the Chaco; all of the hunters of the Paraná Delta, the Pampas and the Patagonia regions, the island of Tierra del Fuego and the Archipelago; and among the *Araucanians*. The *Inca* as well as the modern *Aymara* and *Quechua* use tanned skins in the same manner. Likewise, tanned deerskin bedding is used by some of the Montaña tribes, such as the *Jívaro*.

Plaited sleeping mats are utilized in many parts of the Amazon, in east Brazil and, more rarely, in the Andes. The mats are made of thick totora reed in the Andes, of burití palm in east Brazil, and elsewhere of other types of palm leaves. Cloth is woven in most parts of Amazonia, but the use of woven blankets of cotton or wool is generally restricted to the Andean region. However, in post-European times, woven blankets were also used by the Pampas and Patagonia tribes.

**Platform beds.**—Platform beds are found in east Brazil, in the Montaña region, and in certain parts of the Andes. Many authors think that this form of bed is an early type, which was replaced in many regions by the hammock.

In east Brazil, the *Timbira*, the *Bororo*, the *Southern Cayapó*, and the *Caingang* use a platform bed which consists of four posts, two cross bars, and cross strands of burití bast. Such beds are about 20 inches high, and from 20 inches to 10 feet in width. The beds for the young girls are raised to a height of 6½ feet, and partitioned off with mats. Platform beds are not found in the Chaco proper, but such typical tribes as the *Mbayá*, *Kaskihá*, and *Guaná* adopted them after they moved into the Mato Grosso region. Some of the *Guaraní* groups have adopted platform beds in recent years, and this type has a questionable antiquity among the *Chiquito* and *Churapa* of the Mojos-Chiquitos region.

In the Montaña area, platform beds are found among the *Omagua* and *Cocama*, and appear to be ancient among such tribes as the *Quijo*, *Canelo*, *Candoshi*, *Andoa*, *Cahuapanans*, *Yuracare*, and *Chané*. Later they spread to the *Panoan* groups and to the *Yameo*, *Leco*, *Mosetene*, and *Chimane*. Today the standard type of bed for the *Jívaro* is composed of four upright forked posts and two cross bars, with split bamboo laid between. They are usually covered with deerskin mats. These beds measure 1½ m. long, 30 to 40 cm. high at the back, and 25 cm. at the front. A horizontal bar near the foot of the bed serves as a foot rest. Platform beds, screened with cotton cloth, were used by the *Chibcha* of Colombia, and are also mentioned for the *Cueva* and *Chocó*. There are descriptions of *Inca* platform beds, but their antiquity in this region is doubtful. The modern *Araucanians* make a four-posted bed, with two cross-poles, and skins hung between.

**Sleeping benches.**—In the houses of the modern *Aymara* and *Quechua*, and also in some of the *Inca* houses, a solid sleeping bench of clay or pirca is built across one or both ends of a room. This is then covered with skins and blankets, and serves as a bed for the entire family.

**Hammocks.**—Hammocks are common in most parts of the Tropical Forest. They have many advantages for this type of environment, since they offer protection against damp ground, snakes, ticks, and the like. Fires are sometimes built under the hammocks so that the smoke furnishes further protection from insect pests. Hammocks are not found in east Brazil, with the exception of the *Cre'pumkateye*, who are known to have borrowed them. They are likewise rare in the Chaco, although used as baby cradles by some groups. The *Guaná*, who arrived in the Chaco area recently, and the missionized *Zamuco* are exceptions. Hammocks are not used by some of the simpler Amazonian tribes, such as the *Nambicuara*, *Paumari*, *Macú*, and the *Bororo*. Furthermore, hammocks and platform beds have a mutually exclusive distribution. However, hammocks have a wide distribution in Amazonia, the Guianas, Venezuela, and the West Indies, and are also found among the *Goajiro* of Venezuela, the *Cuna* and *Chocó* of tropical Colombia, and the *Cueva* of Colombia.

There are several types of hammocks. The simplest is that used by the *Ipurina* while traveling: three long bark strips tied at both ends. The *Timbira* and *Sherente* of east Brazil likewise improvise a hammock by interlacing buriti leaves. The *Witoto* hammock consists of a series of cross-strings tied between two heavy side cords. Some hammocks, like those used by the *Tucuna*, are made in a netting technique. Others are made with long warp threads joined together at set intervals, as illustrated by the *Chiriguano*. Finally, the commonest type of *Carib* and *Arawak* hammock is woven on a loom.

Hammocks are made of many materials, of which palm fibers are the commonest. Chambira, tucúm, and caraguatá are other fibers utilized. Cotton is likewise common and some use is now made of wool. Combinations were also used, such as fiber warps and cotton wefts. Hammocks are used for other purposes than sleeping. For example, they are used as capes by the *Carajá*, and as cradles in the Pilcomayo-Bermejo region. Among the *Chocó*, hammocks are only used by children. The *Chiriguano* and others use their hammocks only in the daytime.

**Miscellaneous sleeping equipment.**—True mosquito nets were manufactured by some of the Amazonian groups. The *Guató* made a tent-shaped net of tucúm fibers, intertwined with cotton cloth, which they stretched between two trees or posts. Similar woven cloth nets are reported for the *Omagua*, and the *Chocó* tribes. The *Chocó* used wooden blocks for pillows which are unknown elsewhere. In post-European times, the *Tehuelche* of Patagonia made a bolster of cloth stuffed with horsehair.

**Wooden stools.**—Wooden stools, carved from a single block, are a common article of furniture in most of the Tropical Forest region, although rare elsewhere. They are not found in east Brazil, in the Chaco, or in the southern hunting region, and they are rare in the Andean area. In many groups such stools were reserved for honored guests or individuals of high prestige.

One type of stool, for example, that of the *Witoto*, is nothing more than a tub-shaped wooden block. Commoner types are low benches supported by two projecting side feet, or by four legs. The seats are oval and slightly hollowed. The four-legged seats, often carved in animal shapes, are found among the *Guató*, *Omagua*, *Tucuna*, *Guaraní*, *Cocama*, in the Guianas, and along the upper Xingú. Somewhat similar four-legged carved stools are mentioned for the *Inca* of Perú, where they were reserved for people of high rank. The two-sided stools, also carved or painted, are used by the *Jívaro*, *Yurina*, *Shipaya*, *Asuriní*, *Tupí*, and *Curuaya*. Turtle shells shaped into stools are mentioned for the Guianas tribes. In Colombia, low stools made of one piece of wood, both with and without backs, are reported for the *Chibcha*. In the archeological sites of Manabí in western Ecuador, stone stools are found which have U-shaped seats supported by carved animal figures.

Finally, the *Araucanians* used crude wooden stools.

**Log benches.**—Short logs are used for benches by many Amazonian tribes. Some of these, such as those used by the *Guató*, are crude; others, in the Guianas, have the top side of the log smoothed; and still others, common in the Montaña region, are split logs which serve as stools. Among the upper Xingú tribes, logs are placed along each side of the guest house to be used as seats. In this latter region, the *Naravute* make bark benches.

**Tables and chairs.**—Tables and chairs, such as the rawhide ones made by the *Goajiro*, are generally considered to be European introductions. However, Koch-Grünberg reports the use of tables in southwest Brazil, and implies that it is an ancient practice.

**Storage articles.**—Storage platforms are described under Habitations, and most of the containers used for storage are likewise treated in detail in other parts of the Handbook. Storage baskets are common house articles in the Amazon and in east Brazil. Large jars are used for storage by the *Chiriguano*, the *Inca*, and some of the modern *Aymara* and *Quechua*. In modern times, the *Araucanians* have made wooden trunks for storage purposes, and also use hide sacks for storing clothing in the house.

**Fireplaces.**—In general, constructed fireplaces are not common anywhere in South America. However, fireplaces made of three logs are reported for the *Cuna*, and those built of stones are mentioned for the Guiana tribes and the *Southern Cayapó*.

**Stoves.**—Underground or earth ovens are used in east Brazil and many other places, but true clay stoves are found only in the Andean region, among the *Aymara*, *Quechua*, *Uru-Chipaya*, and the *Inca*. These are a type of pottery brazier with three top holes for burners, and a side opening for inserting the grass fuel.

**Fire fans.**—Fire fans with handles are found throughout all the Tropical Forest region and in the adjacent Chaco area. In western and southern Amazonas, the fans are made of feathers, but in northern and eastern Amazonas, they are of plaited fibers. For fire making, see this volume (p. 283).

**Lamps.**—In general, the only light at night was that of the fire, although torches may have been used. The *Omagua* and *Cocama* lighted their houses with copal resin wrapped in leaves. The modern *Aymara* use pottery-bowl lamps with rag wicks and fat for fuel.

**Manioc equipment.**—In the Chaco, east Brazil, and throughout the Tropical Forest area where bitter manioc is a principal crop, the standard equipment for preparing manioc and extracting the prussic-acid poison is practically part of the household furniture. Such equipment consists of grating boards, a press to squeeze the pulp of the grated manioc, a sifter for separating out the flour, and various containers and platters for cooking the final product. The graters vary regionally. In east Brazil, the grater is any piece of rough bark, and in eastern Bolivia, the prickly root of a palm is used. In the southern Amazon, upper Amazon, and the Atlantic coast region of Brazil, the grater is a curved board with inserted wooden points. In the north, in the Guianas, and in Venezuela, the curved board is fitted with stone points. In the Chaco, the board is flat, fitted with wooden points, and has a handle at each end. A cylindrical, basketry press with a loop at each end is used as a squeezer everywhere except East Brazil. There the grated manioc is wrapped in burití bast strips which are then twisted in order to squeeze out the poison. The sifter is also of basketry, either square or oval in shape. Large, flat, clay platters are usually used for baking the cassava bread. In east Brazil, flat stones are substituted, or the batter may be made into a pie and cooked in an underground oven.

**Mortars and pestles.**—In all of the Tropical Forest region, and in the Chaco, wooden mortars and pestles form part of the household equipment. The commonest mortar is made from a cylindrical log, with a hole, about 5 inches in diameter and 15 inches deep, hollowed out of one end. Some mortars, used in the Guianas, have an hourglass shape and are painted in geometric designs. In east Bolivia, the mortar is a hollowed-out log in the form of a trough. The pestle is a wooden pole as much as 10 feet in length.

**Metates.**—Throughout the Andean region, from Colombia to Chile, stone metates, without legs, have been in use from early archeological periods up to the present. Grinding manos are equally common, but in Bolivia, and perhaps elsewhere, a curved stone was used as a rocking grinder, called a batán. The *Tehuelche* used a stone grinder for preparing seeds, and the *Tupinamba* made a wooden grinder fitted with two handles.

**Ladders.**—In spite of the size of many of the houses in the Amazon, ladders or stairways are rare. Notched logs were used as ladders by the *Cuna* of Panamá and by the *Timbira* of East Brazil.

**Cradles.**—Cradleboards, in which children were securely tied, are mentioned for the *Ona*, *Tehuelche*, and *Araucanians*, and are represented in pottery designs in the early archeological periods of Perú. The *Araucanians* use basketry cradles, suspended from the roofs of the houses. The *Bororo* make a cradle by attaching the four corners of a mat to the roof beams. A skin swung between two posts served as a cradle for the *Mocorí* of the Chaco. As previously mentioned, hammocks are used as cradles by the tribes of the Pilcomayo-Bermejo region, and also by the *Omagua* and *Cocama.*

**Fly swatters.**—In spite of the troublesome insect pests, fly swatters are a rarity. However, fine fiber cloth attached to a handle was used for this purpose by the *Guató*, *Chamacoco*, and *Morotoco.*

**Drums.**—Large signal drums, made from hollowed-out logs, are a standard part of the household equipment among the tribes of the northwest Amazon, such as the *Jívaro*, and the *Witoto.* These are used both as war and as signal drums. To give better resonance, logs are suspended from the house rafters, with one end raised higher than the other.

## FINAL STATEMENT

It is quite evident that house furniture was not elaborate anywhere among the South American Indians. In fact, everywhere the house served principally as a shelter rather than a center of constant activity. Even in the Andean region, where houses were made in more permanent fashion, most of the daylight hours were spent in activities outside the house, which in turn was used principally as sleeping quarters. The absence of windows, proper heating, and general uncleanliness, made houses a place to spend as little time in as possible. As a consequence, little attention and effort went into the manufacture of furniture.

# RELIGIOUS STRUCTURES

### By Wendell C. Bennett

## TEMPLES AND SHRINES

### GENERAL

This topic is limited to the actual construction of religious buildings, such as temples, shrines, and tombs. It does not refer to the religious beliefs or practices. A temple is here defined as an artificial construction, erected and utilized exclusively or principally for religious ceremonies or other religious activities. Shrines are defined in the same terms, except that they are recognized as smaller in actual size. By such definitions, constructions which fall into the category of temples and shrines are largely limited in distribution to the Andean region, and even there the majority are found in the Central Andean area of Perú and Bolivia. This does not imply that religion was undeveloped elsewhere, nor that ceremonial centers were unimportant. It merely refers to the fact that artificial constructions which seem, from the best of available evidence, to have been used exclusively for religious purposes, occur most frequently in the Central Andean area. Elsewhere, ceremonial centers may well have been clearings in the forest, selected sections in the center of villages, or special caves, sacred rocks, and the like; but since these employ practically no artificial construction, they are excluded by these definitions. In many regions, some part of a dwelling or even a separate house was utilized, in part or exclusively, for religious purposes. Such religious centers might well be included in the definition of a temple. However, the construction work does not differ essentially from that of the regular dwellings, and consequently such buildings have already been discussed under the general topic of Habitations.

In this section, the description of temples and shrines is arranged according to areas. The religious centers and constructions of the Southern Hunters and the Amazonian seminomadic horticulturists are first treated briefly. Then, the religious structures of the Northern and Southern Andes are considered separately. The bulk of the discussion is concentrated on the numerous structures of the Central Andes. In the few cases where distribution cuts across these areal divisions, special attention is called to the fact.

## SOUTHERN HUNTERS

In southernmost South America, the *Ona*, *Yahgan*, and *Alacaluf*, erect special ceremonial huts in connection with the important initiation ceremonies called the Kloketen rites. These lodges are, in every case, similar to the normal dwellings although somewhat larger in size. The *Ona* erect a conical tipi of logs covered with sod. Each initiation lodge has a special name, although nontotemic. Log benches are arranged inside the huts for the spectators. In total, the construction work is the same as that in one type of *Ona* dwelling.

The *Yahgan* and *Alacaluf* initiation lodges (pl. 4) differ from their regular houses only in size. An elliptical beehive frame is made of saplings bent over and tied, and then covered with evergreen boughs which serve more for shade than for permanent roofing. A doorway is opened at each end—one for the spectators, one for the novices. Log benches are arranged along the sides for the spectators, and a fireplace is located in the center. The inner surfaces of the roof saplings are painted in geometric red, white, and black designs, and flat boards, similarly painted, may be inserted in the walls or suspended from the ceiling. It is possible that the *Tehuelche* and other groups of the Pampas and Patagonia built similar ceremonial lodges, although no concrete data are available. The initiation rites themselves are found as far north as the Mato Grosso country.

In east Brazil, the central plaza of the U-shaped or circular villages is usually reserved for ceremonial purposes. Houses, similar to the regular dwellings, are erected in the plaza, or the home of the current ceremonial leader may be used for group gatherings. The *Sherente* and northern *Cayapó* build a house somewhat larger than the regular dwelling, in the center of the plaza, which is used as a bachelors' hut and ceremonial center. Two men's houses are reported for the *Pau d'Arco*, and the *Bororo* build a large rectangular men's club which serves as a bachelors' dormitory, a men's workshop, and a ceremonial hall. In the Chaco, an even simpler pattern of religious construction is followed. Ceremonies are held in the open village plaza, or in houses similar to the regular dwellings. The special men's houses are rare or absent.

## AMAZONIA

Throughout Amazonia, Venezuela, and the West Indies, distinctive temples and shrines are rare. Many of the groups build large communal houses in which the central section is utilized for religious ceremonies or, more commonly, one end of the house is partitioned off to serve as a men's quarters and ceremonial center. In some villages, like those of the *Tupí-Cawahíb*, the chief's house is larger than the others, is located in the center of the village, and is used as a ceremonial center. Special men's clubhouses are mentioned for such groups as the *Chacobo* and *Yuracare* in the Montaña area and for the *Carib* in the West Indies. In the Mojos-Chiquitos area, the centrally located men's clubhouse serves as a dance house, a temple, and a place for keeping idols.

In the West Indies, the *Arawak* (*Taino*) build ceremonial plazas, generally called "ball courts." These are both rectangular and square leveled areas, enclosed by flat rocks set on edge or by built-up banks of earth. Oblong and curved-sided ball courts have also been reported. Artificial seats may be built around the edges for the spectators and petroglyphs may be carved on the wall slabs. Ball courts have been found in Haiti, Puerto Rico, eastern Cuba, and St. Croix, but have not been reported from the mainland of South America. The rare stone circles are perhaps variant forms of ball courts. In Santo Domingo, a ring of boulders measured 2,270 feet in circumference. A large block, on which a face had been carved, was located in the center. A somewhat similar circle of boulders, 30 feet in diameter, was found on Sierra Pacaraima at the border of British Guiana. One of the stones was engraved with a froglike design.

Caves containing idols have been found in the West Indies and more rarely in Venezuela, but it is not certain whether these are shrines or burial caves. It might also be mentioned here that the custom of heaping up piles of stone on important mountain passes is found in such geographically separated areas as the Guianas, the Chaco, and the Central Andes.

## NORTHERN ANDES

In Colombia and Ecuador, religious structures are, with a few exceptions, neither numerous nor distinctive. During the period of *Inca* occupation of Highland Ecuador, stone temples were constructed, similar to those described for the *Inca* Period in the Central Andes. In pre-*Inca* times, most Ecuadorian religious buildings probably did not differ greatly from the ordinary dwellings. However, earthwork mounds have been found in the Highland Province of Imbabura and in the Coastal Province of Esmeraldas, which may have served as bases for temples.

The *Chibcha* temples in Colombia were like the ordinary houses, either rectangular with a gabled roof, or circular with a conical roof. The temples were the dwelling place of the priests, and contained small stools on which idols were set. Among the tribes of the upper Cauca River, the temples were also like the houses, although at Popayán the temple was said to be much larger than the ordinary dwelling, since it had as many as 400 poles forming the circular side walls and an exceptionally high roof. Such a building was used as a meeting house as well as a ceremonial center. The archeological sites of the *Tairona* culture of Santa Marta contain numerous circular house foundations outlined with dressed stones. Caches of ceremonial objects have been found in some of these houses, suggesting that they may have served as religious centers. Also in the Santa Marta region are turf-lined courts and stone-lined circular mounds. Although the courts are suggestive of the West Indian ceremonial ball courts, no positive identification has as yet been made.

The archeological region of San Agustín, in southern Colombia around the headwaters of the Magdalena River, has ruins of considerable antiquity, many of which were undoubtedly religious structures (pl. 5). Artificial mounds, 25 m. in diameter and 4 m. high, cover stone-lined temples. One rectangular temple measures 4.40 by 3.06 m., and is covered by a single immense slab, supported by rough stone columns and carved caryatids. The chamber is entered by a descending ramp from the outside. A large statue occupies the center of the temple and smaller ones are found on all sides. The slab walls of some temples are painted with geometric designs in black, yellow, red, and white. There are also shrines in the San Agustín area, similar to the temples only smaller in size (pl. 6). They are lined on three sides and roofed with stone slabs, and contain at least one carved statue.

## SOUTHERN ANDES

Although constructions of stone and adobe are abundant in north Chile and Northwest Argentina, specific religious structures are almost unknown in the *Atacameño* region; no temples or shrines have as yet been identified. Graves are found in some of the houses in the villages and in all probability some rooms were used for ceremonial purposes. In Northwest Argentina, carved pillars, as much as 3 m. in height, are found in the centers of some of the rooms of the *Diaguita* villages. Similar carved uprights are found in the open and possibly designate religious centers. The *Diaguita* also constructed mounds within single or double stone enclosure walls. The mounds are arranged in definite patterns, which suggests some ceremonial significance, but no artifacts have been found in them which would confirm this.

The *Araucanian* religious ceremonies were performed in the village plaza, in one of the regular dwellings, and in designated spots outside of the village, but special constructions were not important. In the region are rocks with deep artificial pits which have been variously interpreted as utilitarian grinding pits, as indications of astronomical practices, and as ceremonial centers.

## CENTRAL ANDES

The Central Andes, which includes Highland and Coastal Perú and Highland Bolivia, has numerous constructions in its archeological past which may properly be called temples or shrines. An exception must be made for the eastern cordillera of Bolivia, which, in spite of evidence of concentrated habitation, is without remains of identifiable religious constructions. Elsewhere, however, remains of ceremonial centers are numerous. Most of the evidence is archeological since, following the Spanish Conquest, Catholic churches soon replaced the earlier indigenous constructions.

Spanish descriptions of *Inca* ceremonial centers and temples furnish reliable evidence for the identification of such buildings, but in the earlier periods the only evidence is archeological. In general, the identification of a building as a temple or religious site is based on the type of construction, the absence of fortification, the difference from the common dwellings, the amount of decoration by painting, arabesque, or stone sculpture, and the accompanying ceremonial objects. Obviously, some of the identifications may be wrong, but it still follows, whether for religious or other reasons, that certain buildings are different than the habitations, and reveal considerable time, skill, and effort in their construction.

The buildings which seem to belong under religious constructions are grouped into a number of rough categories for purposes of description. Where possible the description within each category follows a chronological arrangement plus notes on distribution.

**Altars.**—In a coast Chavín site at Puerto de Supe a simple altar was uncovered which represents one of the earliest religious structures in Perú. This altar is about 1.5 m. square, and rises 50 cm. above the ground level. The construction shows a core of rough boulders, both large and small, completely covered with a coating of clay, parts of which are burned black as though from fires. A second altar was found in a nearby room. In fact, the site consists of a series of connected room foundations, and the whole may have been a religious edifice. Altars are found in association with many other religious structures, but only in this case are they the principal identifying feature.

**Building compounds.**—A number of sites consist of rooms, terraces, platforms, and the like which form a compound, which is hard to describe by any other term. From all evidence, the whole compound served as a religious center. The ruins of Cerro Blanco and Pungurí in Nepeña Valley on the North Coast of Perú illustrate such compounds for the Coast Chavín Period. Before excavation, both of these sites appeared to be low mounds, some 15 m. in height. The excavators uncovered a series of connected rooms, platforms, stairways, sunken courts, ornamental clay columns, and passageways. The building materials were conical adobes and split stones. Many of the walls had been coated with a thick clay plaster which had then been carved into relief designs of clear Chavín origin. Murals on flat walls, as well as the relief work, were painted in red, black, and white. At Pungurí a modeled clay cat sat on the principal stairway, and a grave below it contained a decapitated burial and ceremonial artifacts.

The temple of Cerro Sechín in Casma Valley consists of two terraces, one above the other and connected by a central stairway. The lower terrace is faced with large upright slabs, set at intervals with small blocks between each one. Both the uprights and the blocks are carved on the front surfaces with human and animal figures, and stylized parts of the human body. The upper terrace is coated with a clay plaster and painted with feline designs.

The exact chronological position of Cerro Sechín is still unknown, but terraces faced with alternating uprights and small blocks have been found in some of the Highland Tiahuanaco sites. For example, the site of Pajchiri on the Island of Quehuaya in Lake Titicaca has a large open platform, a slab stairway on one side, and a front facing wall of dressed stone uprights and blocks. The same general construction style is found at Lucurmata and Chocupercas, both Tiahuanaco Period sites located on the shores of Lake Titicaca. The ruins of Queneto in Virú Valley (fig. 5) is still another variant of this type. There are two open rectangular platforms, one raised behind the other and connected by a stairway. Both are outlined by double walls composed of slabs set on edge with a rough fill in between. Authorities disagree about the age of Queneto, some thinking it quite early, others assigning it to the general Middle Periods.

**Single pyramids.**—Many religious sites consist essentially of a single great pyramid. This is located either on a prominent natural outcrop or is built up to such a height that it commands an excellent view of the coastal or mountain valley. The pyramids in general have no interior rooms or galleries; rather, they served essentially as bases for smaller buildings on the top. On the Coast of Perú, the building materials are usually sun-baked adobes, but in the Highlands stone is employed, particularly as a facing. The location of the pyramids in such favorable positions might suggest a defense function, but the details are not those of a fortification.

Single pyramids of great size made of adobe bricks are characteristic of the Mochica Period on the North Coast of Perú. The Temple of the Sun at Moche is an outstanding illustration. It consists of a base platform, 228 by 136 m. in ground plan and 18 m. high.

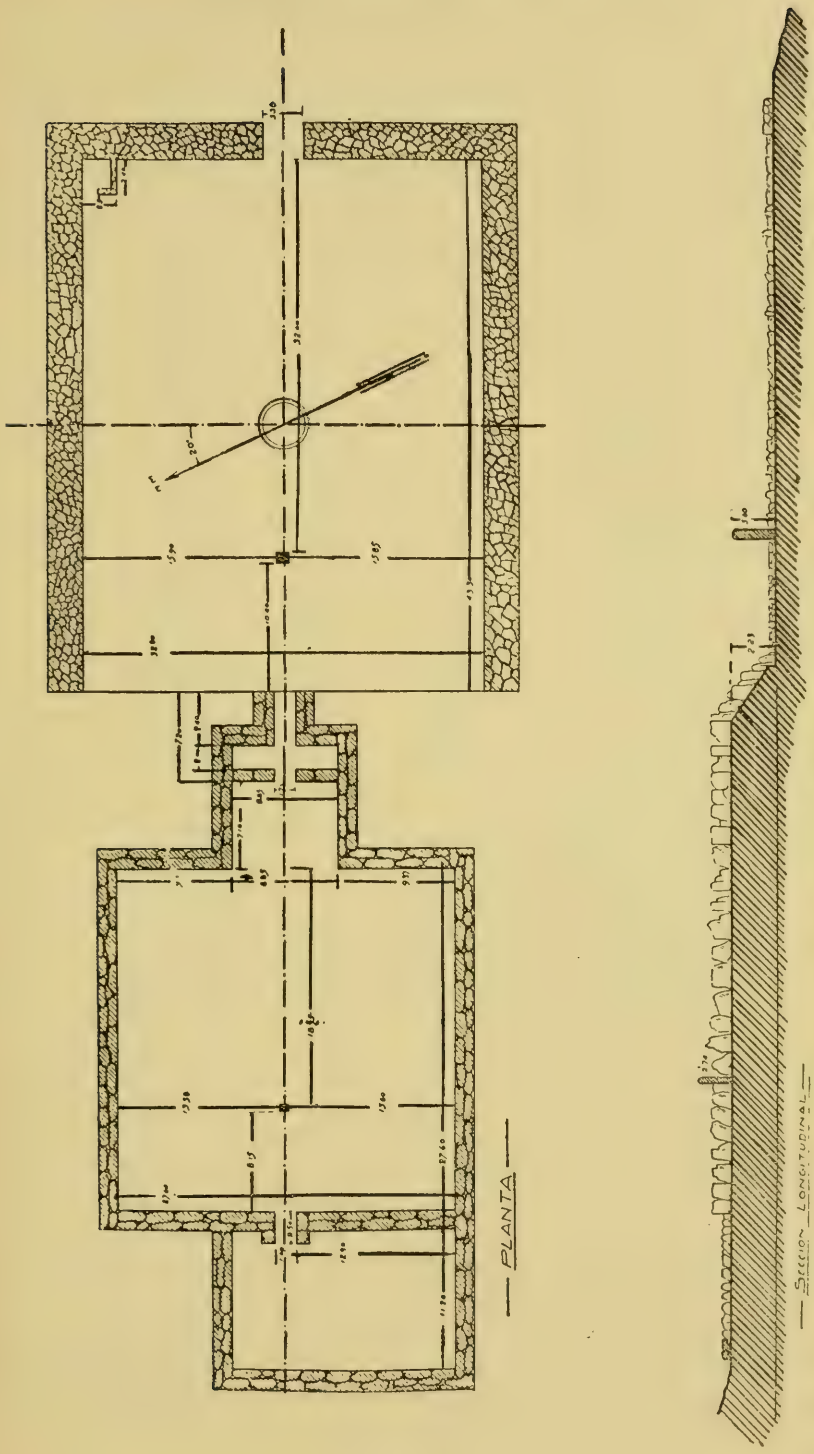

PLANTA
20°
SECCION LONGITUDINAL

FIGURE 5.—Ground plan and cross section of Queneto temple, Virú Valley. (Scale of 1 : 200.) (After Larco Hoyle, 1938–39, fig. 1.)

The sides are stepped back, to allow for the great height. On one end of the platform is a stepped pyramid 103 m. square by 23 m. high. The Temple of the Moon, nearby, is more like a building compound than a pyramid. It is noteworthy because of the painted frescoes in Mochica style. Burials are found at Moche in cemeteries around the bases of the pyramids, and on some of the platforms. Some of the burials are contemporaneous with the temple; others are of later periods. The sites of El Brujo, Cucurripe, and Pucuche in Chicama Valley; and El Castillo, Santa Clara, Mochán, and Huancaquito in Virú Valley are other illustrations of Mochica Period pyramids. Single pyramids are also characteristic of Middle and Late Periods on the Central and South Coast of Perú. The sites of Maranga in the Rimac Valley and Cerro Colorado in Ica Valley, are good illustrations. In the Highlands, stone-faced stepped pyramids are found in the Callejón de Huaylas and elsewhere, although period identification is difficult. The site of Vilcashuamán is typical.

In total, the single pyramids of the Coast show considerable variation. Some are high, others low. Some are broken by platforms at different levels, others have steep sides and a flat top. Many have narrow, set-back terraces on the sides. Ascending stairways or ramps are common. Traces of wall painting are frequent, although recognizable designs are rarely preserved. The site of El Brujo in Chicama Valley has a wall decorated with a relief clay arabesque. All of the pyramids are impressive because of the amount of organized labor which must have gone into their construction. Pyramids are also found as parts of religious centers or as temple bases in cities. These will be described in connection with those categories.

**Multistoried buildings.**—Two- and three-storied stone temples are common in the Callejón de Huaylas. Although the prototype of such buildings may be the ancient religious center of Chavín de Huántar, the multistoried buildings included in this category pertain to the Middle Periods of the North Highlands. The temple of Willkawaín (figs. 6, 7) is a good illustration. The over-all ground plan is 15 by 20 m., and the height is over 9 m. The central core of the building has three floors, and is totally constructed of stone. Even the gabled roof is formed by flat slabs covered with dirt. Each floor contains five rooms of various sizes, connected by interior doorways. A ventilating shaft circulates air through the whole structure. On the outside are projecting eaves and an inset niche, below which a row of carved stone puma heads once ornamented the building. Similar temples are found in many parts of the Callejón de Huaylas, and to the north at such sites as Huamachuco.

**Religious centers.**—At the present time, certain towns, like Copacabana in Bolivia, are important religious centers. Once a year the

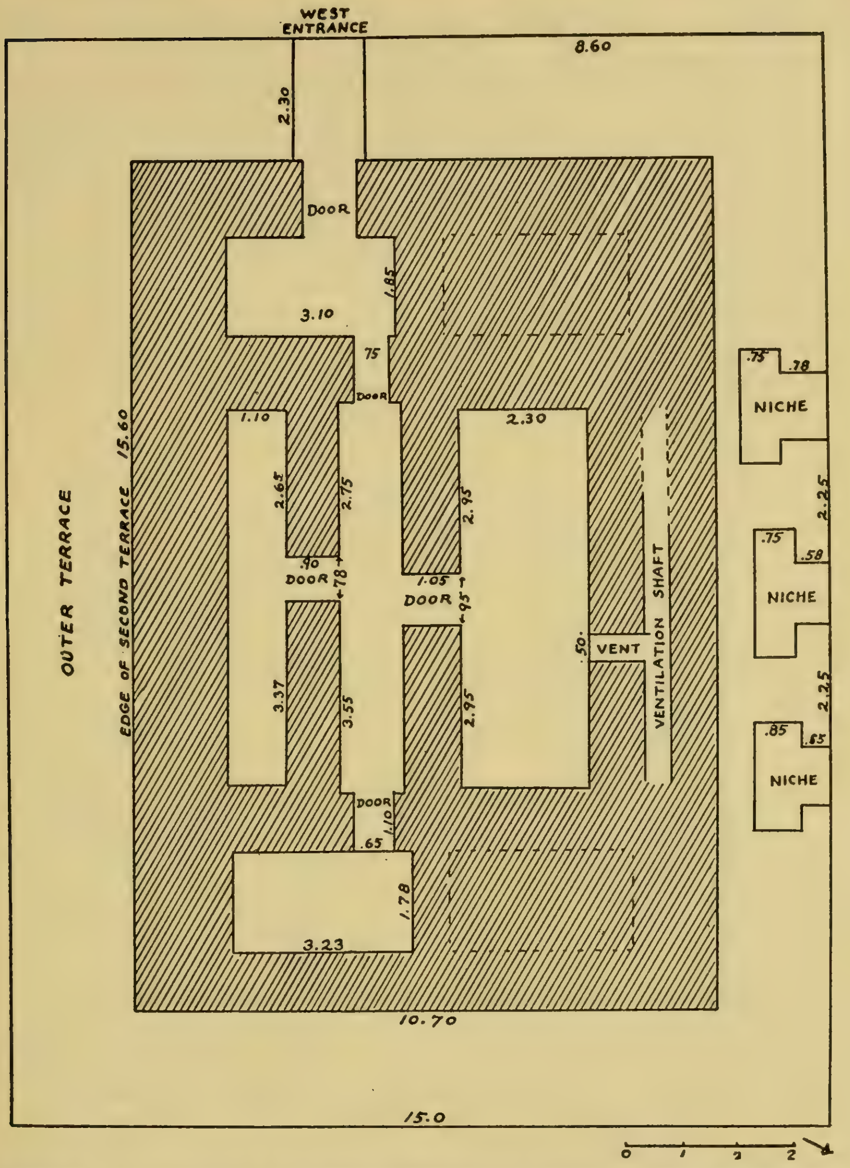

WEST ENTRANCE
8.60
2.30
DOOR
3.10
1.85
75
DOOR
1.10
2.65
2.75
2.30
2.95
.75
.78
NICHE
15.60
EDGE OF SECOND TERRACE
OUTER TERRACE
.90
DOOR
.78
1.05
DOOR
.95
.50
VENT
VENTILATION SHAFT
2.25
.75
.58
NICHE
2.25
.85
.65
NICHE
3.37
3.55
2.95
DOOR
1.10
.65
1.78
3.23
10.70
15.0
0
1
2

FIGURE 6.—Ground plan of Wilkawain three-storied temple. (After Bennett, 1944, fig. 2.)

Indians for miles around foregather at these centers for religious ceremonies. Such "Meccas" are also reported by the Spanish Chroniclers for the early Colonial Period. Pachacamac was such a center in late *Inca* and early Spanish times. It seems plausible that a similar pattern existed in the archeological past. Some ruins are found which cover a large area and contain many buildings, all of which seem to be religious constructions.

The ruins of Chavín de Huántar (pl. 8) in the North Highlands of Perú have every appearance of a religious center. The unit, which covers an extensive area, consists of five major platformlike buildings as well as terraces, sunken plazas, terreplains, and the like. There is good evidence of planning in the arrangement of this site. For example, the central sunken plaza is flanked on both sides by raised platforms and backed by a terrace and one of the principal buildings. None of the buildings has the appearance of a habitation, nor are there any features which would suggest fortification. The stone carvings associated with the ruins represent a stylized feline divinity, and the ceramics are ceremonial rather than utilitarian.

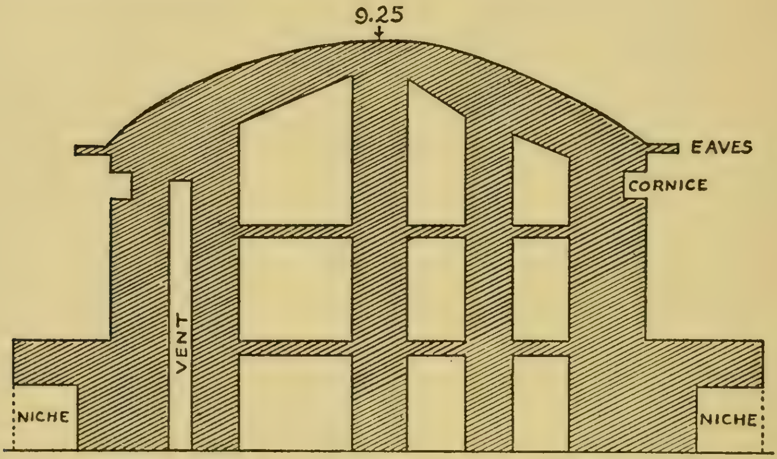
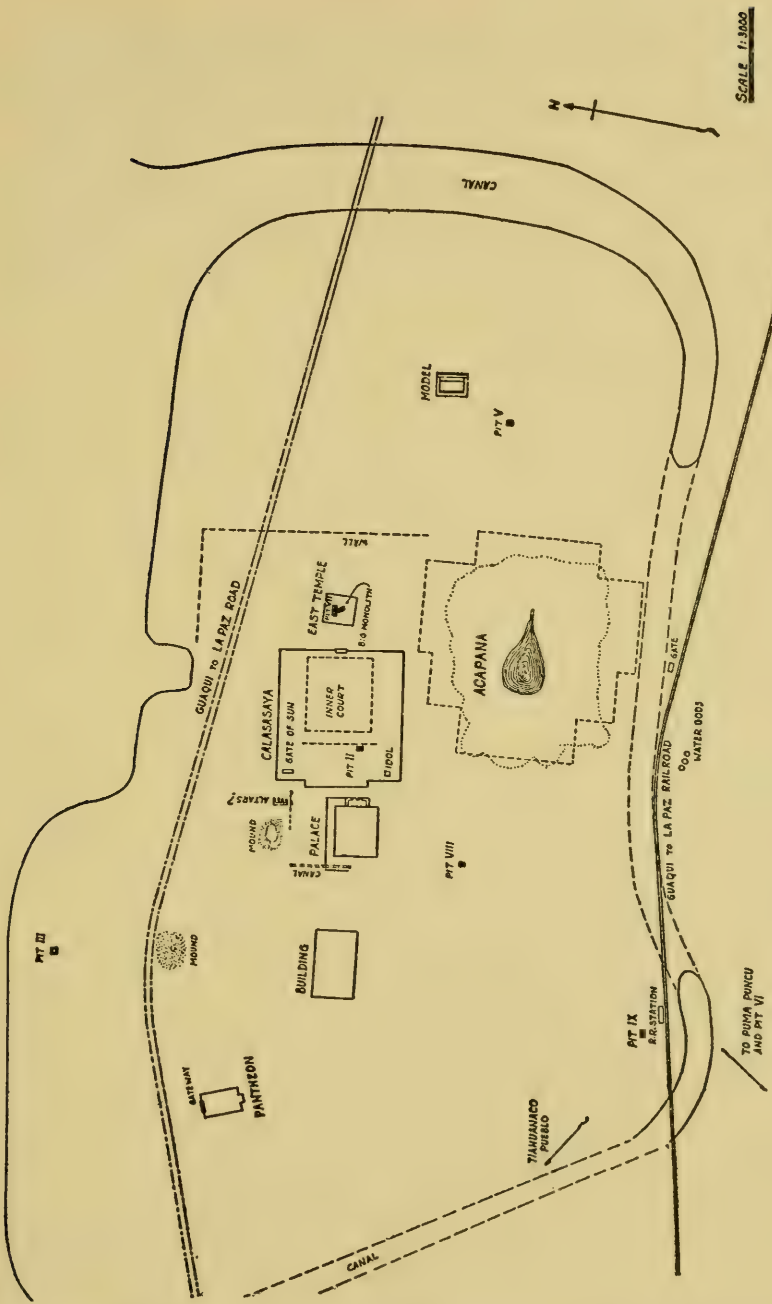


Figure 7.—Cross section of Wilkawaín temple. (After Bennett, 1944, fig. 3.)

The principal building at Chavín, called the Castillo (pl. 8, *top*), has the appearance of a raised platform about 75 m. square, and over 13 m. in height. The interior consists of three floors of intricate stone-lined and covered galleries, small rooms, and an elaborate system of ventilating shafts. The floors are connected by ramps and stairways. The outerwall of the building is faced with carefully dressed and fitted stone. There was once a cornice of carved flat slabs, beneath which carved stone heads were inserted in the wall. A stone stairway leads up the front side of the building, and on top are the foundation stones of house enclosures. Other buildings in the unit also have interior galleries, although usually less elaborate. In one, however, the great stone idol, called the Lanzón, is still in situ.

The ruin of Tiahuanaco (fig. 8) in Bolivia is another such religious center. A stone-faced, stepped pyramid with a reservoir on top may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GATE OF SUN
INNER COURT
PIT II
IDOL
ALTARS?
MOUND
PALACE
CANAL
PIT VIII
WATER ODS
GUAQUI TO LA PAZ RAILROAD
PIT III
MOUND
BUILDING
PIT IX
R.R. STATION
TO PUMA PUNCU AND PIT VI
GATEWAY
PANTHEON
TIAHUANACO PUEBLO
CANAL

FIGURE 8.—Plan of the ruins of Tiahuanaco, Bolivia. (The pits indicated are modern archeological excavations.) (After Bennett, 1934, fig. 1, from Posnansky.)

have been used as a fortress, but all the other construction work seems to have been for religious purposes. The principal building is a raised platform, faced on all sides with dressed and fitted upright slabs and small blocks. Within this platform is a sunken interior court with a stone stairway at each end. Around this building, called Calasasaya, are other smaller units, all made with carefully cut and dressed stone. Many of the stones, when first excavated, showed traces of painted designs. Likewise, stone statues and other architectural pieces of sculpture are found around these ruins. Although habitation sites do not occur at the ruins themselves, the remains of a village are not far away.

The extensive ruin of Pachacamac on the Central Coast of Perú is one of the best examples of a religious center. The principal building, the Pyramid of the Sun, covers an area of some 12 acres and rises 75 feet in height. The sides are terraced. Some of the upper terraces have painted mural designs, while on the lower ones are the foundations of houses which were used by the priests and assistants at the temple. An older and smaller temple is nearby, and in between the two structures are cemeteries. The whole temple section is surrounded by an enclosure wall, outside of which are rows of houses, arranged in streets, which served as temporary residences for the numerous visitors who came to Pachacamac.

**Temples in cities.**—In the Late Periods and in the *Inca* Period, temples and other religious structures were no longer isolated units, but were located in the cities and towns. The city of Chanchan (pl. 3, *bottom*), on the North Coast of Perú, is composed of many walled-in sections, each of which contains houses, gardens, courts, streets, and a pyramid temple. The same is true of other large cities like La Barrânca in Pacasmayo Valley, El Purgatorio in Lambayeque Valley, and others on the Central Coast. Every important *Inca* town had a temple and resident priests, and the larger cities had special sections for the temples and the religious ceremonies. The *Inca* capital at Cuzco had the most important religious center, called the Coricancha. The building was taken over by the Dominicans in the 16th century, so that in spite of some early descriptions, the exact dimensions and arrangement of the main temple are not precisely known. It is described as some 1,200 feet in circuit, and was located on the principal square of the ceremonial part of the city. There was only one outside doorway, which entered a room some 296 by 52 feet with an elliptical apse at one end. The walls were made of carefully dressed stone, and the roof was of gabled beam construction with a specially woven thatch. Hammered gold plate and other ornaments embellished the walls and the roofing beams. This room contained an altar, the principal idols, and the mummies of the past *Inca* rulers.

Smaller shrines and cloisters adjoined this main room, and there were smaller buildings which served as residences for the priests, the servants, and other assistants.

**Miscellaneous.**—Various other types of religious structures in the Central Andes cannot be included in the previous categories. At Kenko, near Cuzco, there is a large upright stone with an altar of dressed stone built around its base. Partially surrounding this is a semicircle of dressed-stone seats, like an amphitheater for the spectators. There are tunneled-out caves in the outcropping rock nearby which were used for ceremonies in *Inca* times. At the *Inca* city of Machu Picchu, the temple is a three-walled building opened on the front. At the back is a large stone block, which served as an altar. In the decadent Tiahuanaco Period, the temples were semisubterranean structures. These are simple rectangular pits with the four sides faced with stone blocks and uprights. Temples which illustrate this type have been found at Tiahuanaco itself, and at the sites of Chiripa and Lucurmata on the shores of Lake Titicaca. The temple at Pucara in South Highland Perú is of a type so far unknown elsewhere. In general, it consists of a sunken central enclosure surrounded by a horseshoe-shaped series of walled-in room units, each one of which contains one or two slab altars. Again, stone carving is associated.

For the past 400 years, the building of Catholic churches and shrines has practically replaced all native construction. The contemporary Indians still pile up stones at certain important passes, but this can hardly be called building. The *Chipaya* Indians in Bolivia build mud cones, 1.20 to 1.70 m. high, which they arrange in rows which run from 5 to 15 km. out of their villages. The cones have a niche cut out of the eastern side in which offerings are placed. The cones are called statues and given particular names.

**Stone carving.**—In the Central Andes, and adjacent regions, stone carving is commonly associated with the religious structures. Although properly speaking not part of the present topic, a few notes are included on the distribution of large-scale stone carving. In Colombia, large stone statues and carvings are characteristic of the early San Agustín Period. Elsewhere in Colombia, some stone statues are found in the Tierradentro region, and a few pieces have been reported from the southern Departments of Nariño and Putumayo. The Highlands of Ecuador lack significant stone carving. On the coast, however, statues are found in the Department of Guayas, and the Department of Manabí is noted for its large U-shaped stone seats with carved animal bases, and for its flat slabs with low relief figures. In general, stone carving is not found on the Coast of Perú; a notable exception being the carved uprights and blocks which form the terrace facing of Cerro Sechín temple in Casma Valley. Another rare exception is a carved lintel from a site in Huarmey Valley. In the north Highlands of Perú, stone carving on flat slabs is characteristic of Chavín, although true statues are absent. Also at Chavín are stone heads, both human and animal, with tenons for wall insertion (pl. 8, *bottom*). Similar heads as well as relief lintels are found at Huamachuca, Cajamarca, the Callejón de Huaylas, and Aija. True statues associated with Recuay and subsequent periods are found in the Callejón de Huaylas and at Aija. Stone carving is rare in the Central Highlands, although statues are found at Wari. In the South Highlands, statues and decorated slabs are numerous at Pucara. The same is true of Tiahuanaco in the Bolivian Highlands, although elsewhere in Bolivia, stone carving is not common. The southernmost extension of carving is represented by the ornamental pillars in Northwest Argentina.

## TOMBS

### GENERAL

Burial is generally an important aspect of the religious practices of the South American Indians. Everywhere the preparation and disposal of the dead is an important activity, frequently accompanied by much ceremony. There are numerous ways of preparing the body for interment, to which natural desiccation or mummification can be added. In some areas, particularly the Amazon region, the body is first exposed or deposited in a shallow grave until the flesh has decomposed. Then the bones are reburied. In most parts of South America, it was customary to place numerous objects in the grave (fig. 9), a factor of great importance for the archeologist.

In this section, designated religious structures and the types of tombs are discussed. No attempt is made to include the mortuary customs, the preparation of the corpse, the factor of single or multiple burial, the position of the corpse in the grave, primary or secondary burial, and the grave contents. All of these aspects of burial are dealt with elsewhere in the Handbook. Here the grave or tomb type alone is considered.

### LOCATION OF TOMBS

Some Indian groups in South America bury their dead in special cemeteries; others pay little attention to particular burial sectors. Cemeteries are usually considered as sacred areas, and in some sections are associated with temples. Information on this subject comes from both the ethnological and archeological sources.

**Cemeteries.**—It is doubtful that the Southern Hunters had any special cemeteries. The same is true for many parts of the Amazon

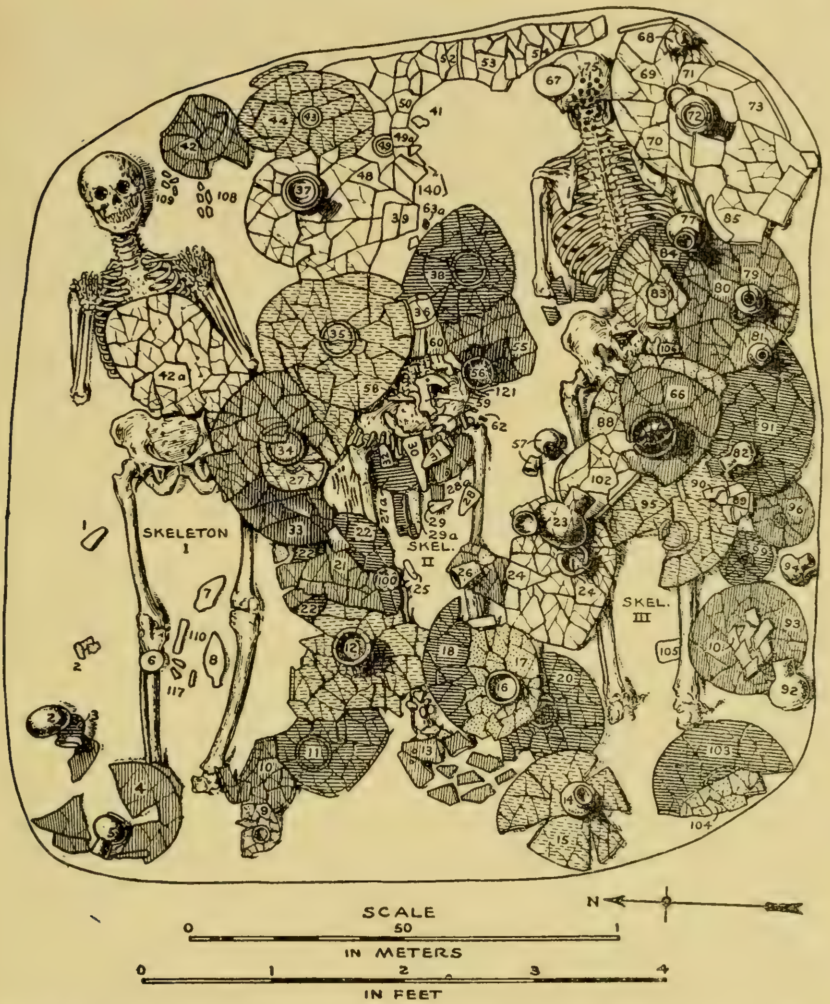
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FIGURE 9.—A rich, treasure-filled grave; Coclé, Panamá. (After Lothrop, 1937 a, fig. 224.)

region, although regular cemeteries are found in some sections of the Mato Grosso area, and in Venezuela. In the Guianas, some cemeteries are reported but they are exceptional. Throughout the Andean area, burial in cemeteries is the standard practice, with the possible exception of the *Araucanians*. In the Central Andes, cemeteries occur in every archeological period, and are usually located in terrains not suitable for cultivation. In Ecuador and Colombia, an area which has a number of tombs reasonably close together is called a cemetery. Under the influence of the Christian religion, burial in cemeteries is now almost universal in South America.

**Grave in house.**—Burial within the house is common in the Amazon region. If the deceased is a chief or a person of importance, the house may be abandoned or destroyed; otherwise, the occupants continue to live in the house. Special burial huts, containing log-lined chambers are reported for the Amazon region of Venezuela and for Panamá. Archeological dwelling sites in the *Yahgan* region of southern South America contain burials, and the ethnological accounts state that such camp sites or beaches were thereafter abandoned. Graves in houses are found in the Northern Andes at Carchi in Ecuador, and in Pichindé, Río Bolo, and Calima sites of the Upper Cauca in Colombia. In the Southern Andes, burials are found in some *Atacameño* and *Diaguita* dwellings, and the practice is reported for the *Araucanians*. In the Central Andes, house burials are rare. However, the Chiripa houses (pl. 7, *top*) on the shores of Lake Titicaca in Bolivia, contained as many as a dozen burials under the packed-clay floor, and one Gallinazo house site in Virú Valley also contained a burial.

**Burial mounds.**—Artificial mounds made for the purpose of burial are not common in South America and have a sporadic distribution. In some regions, mounds were built up for dwelling sites in marshy sections, such as the Lake Valencia shore in Venezuela and the Mojos lowlands of eastern Bolivia, and were later used for burials. However, there are some true burial mounds. In Venezuela they are found in the northern states or Aragua, Portuguesa, Barinas, and Apure. Burial mounds have been discovered on the Island of Marajó, in Brazil, and in the Mojos region of eastern Bolivia. Likewise, two burial mounds were found at the site of Colcapirhua, in the east Bolivia cordillera. In Colombia, burial mounds are known for the *Tairona* of Santa Marta, and for the *Sinú*, on the river of the same name. In Ecuador, burial mounds are found on the Coast, in Esmeraldas and Guayas Provinces, but in the Highlands only in connection with Period I of the Imbabura sequence. In the Central Andes, the only burial mounds yet known are at the Gallinazo site on the North Coast of Perú.

**Pyramid platforms.**—The practice of burying on the platforms of pyramid temples is found in the Mochica Period of the North Coast of Perú (pl. 9, *bottom*) and in the *Inca* Period at Pachacamac. Future evidence will probably show that platform cemeteries occur in many other periods.

**Cave burials.**—There are few reports on cave burials, but probably caves were so used wherever they occur. The earliest burials yet discovered in southern Patagonia are in caves, and ar associated with now-extinct animals. Many burials have also been found in the caves of Lagoa Santa, east Braizil, although not in association with the extinct fauna. No caves are available in most of the Amazon region, but to the north, in the Guiana Highlands, cave burials are found. They are also not uncommon in the West Indies. In Colombia, the *Chibcha* made extensive use of caves for their burials, and there are reports of cave burials elsewhere in Colombia and in Highland Ecuador. The *Atacameño* in North Chile made occasional use of caves for burial. Cave burials have been found in several parts of the Central Andes, although period identification is lacking, except for the *Inca* finds.

### TOMB TYPES

**Simple pit.**—Graves which are simply pits dug directly in the ground are found everywhere in South America, as a variant if not a major type. Among some tribes, the corpses were interred first in shallow pits, and later reburied in urns or in other graves. Simple pits are the only type of tombs found among the Southern Hunters, and the same is true for many Amazonian groups. At Mojos, pit burials antedate urn burials. In Venezuela, pit burials are widespread, but are particularly typical of the Cabrera culture. In Colombia, pit burials occur as variant types in the San Agustín, *Quimbaya*, *Chibcha*, and *Tairona* regions, but so far none has been found in the upper Cauca region. In the Southern Andes, the *Araucanians*, *Atacameño*, and *Diaguita*, all utilized pits for burial, as well as other types of tombs. Unelaborated pits also occur in every Central Andean archeological period.

Some simple pit tombs are lined with bark, leaves, or grass, but the majority have no lining and are filled in after the interment with the same earth excavated. Likewise, most of these pit tombs have no specific shapes, but are rather dug to accommodate the body. However, in Perú, some pits do have typical shapes, such as the rectangular Coast Chavín tomb some 80 cm. to 2 m. deep, and the unlined shaft of the Chimu Period.

**Slab-covered pit.**—A minor variant of the simple-pit tomb has slabs laid over the grave. In the *Chibcha* tombs such slabs do not actually form a roof but merely cover the body itself. In the White-on-Red Period on the Coast of Perú, adobe or stone slabs are laid over the simple pit, in one case in the form of a peaked roof, or the pit is covered with poles.

**Circular pit.**—Circular pits, from 1 to 2 m. deep, are found in some sites in the Andean region, such as the Proto-Panzaleo II Period of Chimborazo Province in the Highlands of Ecuador. Similar pits, lined with stone, are common for the *Atacameño*, *Diaguita*, and the Coast Chavín Periods. In the Coast Tiahuanaco Period of Perú, such stone-lined pits are covered with cane or mat. Some of the *Atacameño* circular pits are not stone-lined but are roofed with cane.

**Conical pit.**—Stone-lined pits of conical shape with a covering of cane or mats, have been found only in the Coast Tiahuanaco Period of Perú.

**Shaft-over-chamber.**—A shaft which broadens out at the base into an enlarged chamber is frequently described as a "bottle-shaped" or a "pot-shaped" tomb. The distribution of this type is limited to the Andean region. In Colombia, shaft-over-chamber tombs are found in the Quebrada Seca culture, and the shaft itself is closed with a large stone slab (fig. 10). One style of *Atacameño* tomb pertains to this category. On the Coast of Perú, the earliest occurence of shaft-over-chamber tombs is in the Cavernas Period at Paracas. Here the shaft is tubular, from 3 to 4 m. deep, and the chamber below is large and globular. This type of tomb is also typical of the Nazca Period on the South Coast of Perú, and the graves either have a round shaft and a square chamber or a square shaft and a rounded chamber. The walls of the tomb are usually lined with poles or with rough stone. Finally, "bottle-shaped" tombs, are common in the *Inca* Period.

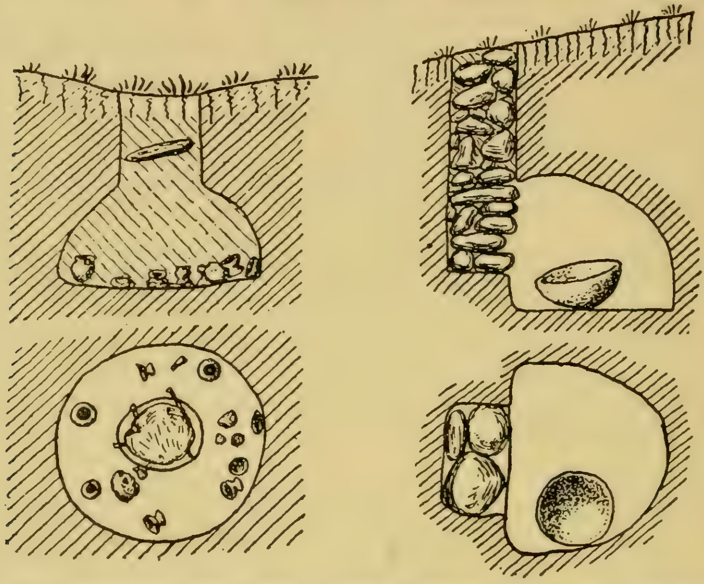


FIGURE 10.—Colombia grave types, Cauca Valley. *Left:* Shaft-over-chamber. *Right:* Shaft-and-chamber. (Cross section and ground plan shown for each.) (After Ford, 1944, figs. 12 and 2.)

**Box tomb.**—Rectangular or square box tombs, lined and covered with stone or adobe, are found in the Andean region. At San Agustín in Colombia, they are of large size. One measures 2.84 by 1.30 m. and is 88 cm. deep. It is covered and lined with stone slabs which have painted designs. Smaller box tombs are found in the *Quimbaya* and the *Tairona* regions. However, none has been discovered in Ecuador. Some of the early Mochica Period tombs are lined with rough stone, but an adobe brick lining is far commoner. For illustration, one tomb measured 2.22 m. long, 65 cm. wide, and 50 cm. deep. A longitudinal pole furnished support for a roof of adobe and stone. Rectangular niches in the walls of the tomb contained ceremonial ceramics. Other Mochica tombs are even larger, and many are covered with poles. In the North Highlands of Perú, stone box tombs are associated both with the Recuay Period and with the Tiahuanaco Period. Some are of small size with slab walls and cover. One measured, for example, 35 cm. square and 50 cm. deep. Such tombs are commonly located well under large surface boulders. Other box-type tombs in the North Highlands are larger. A typical one measured 1.12 m. by 2.55 m. and was 2.5 m. deep. The sides were faced with rough stone, and great slabs were placed over the top. Box tombs are found in Bolivia in the Chiripa and Cochabamba-Tiahuanaco Periods. In the Southern Andes, box tombs are mentioned for the *Araucanians*.

The dressed-stone vaults of the *Tairona* culture in Colombia might be classed as a variant type of box tomb. The vaults are above ground, and are built with carefully dressed and fitted blocks. One measured 2.2 by 1.8 m. Likewise, the megalithic stone box sarcophaguses with carved stone lids found at San Agustín in Colombia might be considered a variant.

**Shaft-and-chamber.**—This type of tomb consists of a circular, square, or oval shaft, from one to as much as 25 m. deep, with a hollow side chamber at the base. Shaft-and-chamber tombs are particularly characteristic of the Northern Andes, although they occur in parts of the Central Andes, in North Chile, in Northwest Argentina, and even at Counany in the Guianas. Similar tombs have a wide distribution in Panamá and Central America.

A typical shaft-and-chamber tomb in the Upper Cauca region of Colombia has a shaft about 50 cm. square and 2 m. deep. A window-door, closed with a flat stone slab, enters the side chamber which is quarter-orange in shape. Similar tombs, with but minor variation in the measurements and shapes of the chambers and shafts, are found throughout the Upper Cauca, the Nariño, and the *Quimbaya* regions, and are a rare variant in the Santa Marta region. In Ecuador, these tombs are particularly common in the Carchi Province of the Northern Highlands. In the Central Andes only the late Ica Period on the south Coast of Perú has many of these tombs, although they occur also in the Cavernas Period at Paracas. Finally, such tombs are a minor type in the *Atacameño* and *Diaguita* regions of the Southern Andes.

A more complex shaft-and-chamber tomb has a circular shaft, from 2 to 10 m. deep, with a series of chambers opening off of it. A number of chambers may be arranged around the base of the shaft, or they may be placed at different levels. The multiple-chamber tomb is typical of the Carchi Province in Ecuador and a common type in the Cavernas Period at Paracas in Perú.

**Subterranean room.**—A subterranean room used as a burial chamber is typical of the Tierradentro culture in Colombia (fig 11). The rooms are excavated out of the soft rock and vary from simple to elaborate. One of the elaborate type is entered by a side shaft which contains an irregular circular stairway. The subterranean chamber is somewhat oval in ground plan, and has an arched-over roof. Two central columns are left as supports, although there is no built-up construction work in the interior. Around the sides of the room are niches, separated by pilasters. The pilasters and the central columns are ornamented with relief designs, and the side walls and roof are painted with four-color geometric designs. Somewhat similar subterranean rooms are reported for the *Quimbaya* region, although they have not been described.

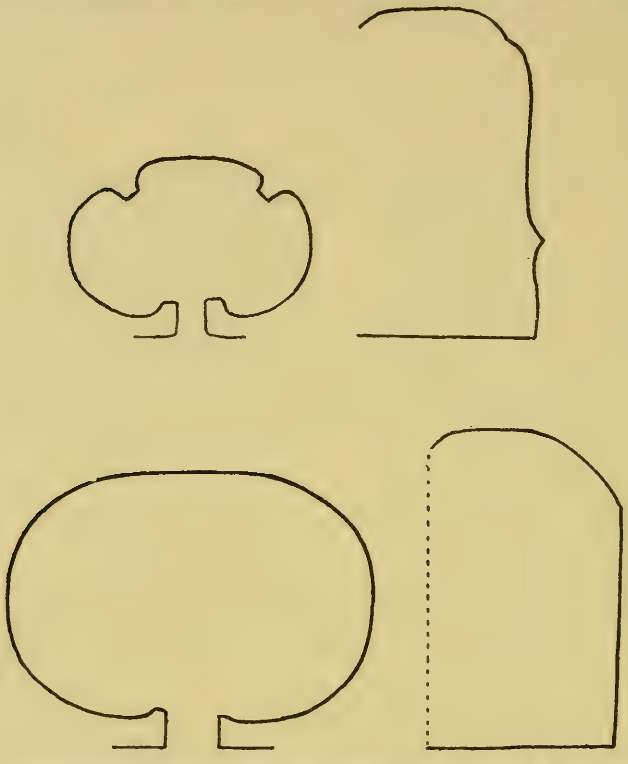


Figure 11.—Tierradentro tomb plans, Colombia. Two types of floor plan arrangements with accompanying cross sections. (After Hernández de Alba, 1938, figs. 9 and 25.)

Some Middle Period tombs of the North Highlands of Perú are large rooms walled and roofed with slabs and covered by an earth mound. A Middle Period tomb type on the South Coast of Perú is a rectangular, subterranean room, roofed over with logs. Tapestries are hung on the side walls for decoration, and entrance is through the roof. A similar tomb, roofed with poles and leaves, is typical of the Ica Period. The *Atacameño* in North Chile are said to have made tombs in the form of a subterranean room entered by an inclined ramp. Benches were placed inside, around which the mummies were arranged.

**Room.**—Numerous mummy bundles were found at the Grand Necropolis of Paracas in large, stone-walled rooms or chambers. There is little evidence that these were ever roofed over, but rather they were filled with sand in order to cover the bundles.

**Gallery.**—Subterranean, stone-lined and covered galleries have been found at San Agustín in Colombia, and in the Recuay Period in the North Highlands of Perú (fig. 12). A typical Recuay gallery is 95 cm. wide, 90 cm. high, and 7.5 m. long. The sides are lined with large flat slabs, and the roof is also of large slabs which are over a meter below the ground surface. The gallery is entered by a shaft at one end

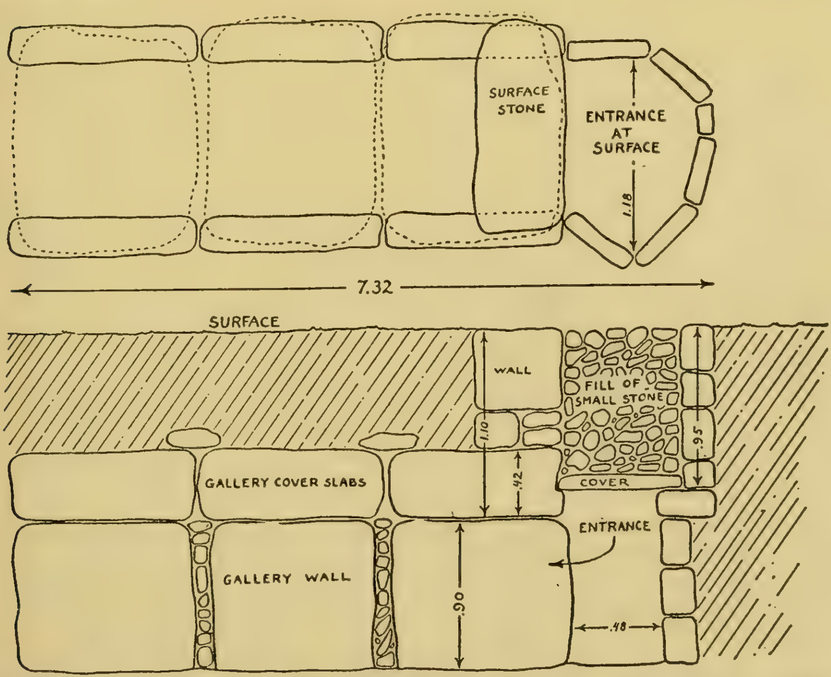


Figure 12.—Ground plan and cross section of Recuay style gallery. (After Bennett, 1944, fig. 14.)

**Tower.**—Burial towers called chullpas, of stone and adobe, are a unique feature of the Lake Titicaca region in southern Perú and Bolivia (pl. 9, *top*). The towers are both round and square. Some are made of rough stone, others of carefully dressed stone blocks, and still others of adobe bricks. The towers contain a small burial compartment in the lower half which is entered through a narrow door. The upper half may be solid or it too may contain a small compartment, probably intended for offerings. The towers are commonly found in the ruins of villages.

**Urn.**—Urn burial was not practiced by the Southern Hunters and is virtually absent in the Central Andes. Otherwise, it has a wide distribution in Amazonia, Venezuela, Colombia, Northwest Argentina, eastern Bolivia, and North Chile. Urns are of many shapes, and there is likewise great variation in their use for burial. Some urns have a U-shaped profile, some are like large cooking jars, and some are tripod vessels. Many urns are decorated with modeled and relief features and limbs. Urns are usually utilized for secondary burials. The vessel is covered with a stone slab, a small bowl, or another urn. In Northwest Argentina, the *Diaguita* devoted entire cemeteries to child urn burials exclusively.

### DISTRIBUTION OF TYPES

Although distribution has been mentioned in the above discussion of types of tombs, a brief résumé in terms of area and period is added. Little is known about the tombs of the southern hunting groups, althrough simple pit graves are probably the only type utilized. The Tropical Forest region is characterized by urn burials. The urns are quite varied in styles and may be placed in cemeteries, in house sites, or in mounds. Other tomb types are simple pits, and one rare shaft-and-chamber grave has been found in the Guianas. Burial huts are used and the corpse may be placed in above-ground log coffins, but these mortuary customs are not included in the category of tomb types.

The Northern Andean region has a great variety of tomb types. In Colombia, shaft-and-chamber and urn burial have the widest distribution, but simple pit graves are also common. The painted subterranean rooms of Tierradentro are unique. Other tomb types found in Colombia and Ecuador include shaft-over-chamber, stone-covered pits, circular pits, box graves, and gallery graves. The stone box vaults and sarcophaguses are unique variants. In the Southern Andes tomb types are more limited. Simple pits are common, but circular pits are more typical. Shaft-over-chamber, shaft-and-chamber, and subterranean rooms are rare types. Urn burials have a fairly wide distribution, particularly in Northwest Argentina and North Chile.

In the Central Andes, the various tomb types can be summarized in terms of major archeological periods, following the early to late order of Chavín, Early, Middle, Late, and *Inca.* In the Chavín Periods, simple pits, stone-covered pits, and circular pits are by far the most typical. If the Cavernas Period of Paracas is included with Chavín, then shaft-over-chamber and shaft-and-chamber types can be added. In the Early Periods, the adobe-lined box tombs are characteristic of the North Coast; the shaft-over-chamber or pot-shaped tombs characterized the South Coast; stone-lined galleries are typical for the North Highlands; and simple pits and stone box graves are typical for the Southern Highlands and Bolivia. In the Middle Periods are found the simple pits, circular pits, the unique conical pits and subterranean rooms, particularly on the South Coast. The rare urn burials also belong to the Middle Periods. The Late Periods are marked by simple pit burials on the North Coast, and subterranean rooms on the South Coast. Rarely, shaft-and-chamber graves also occur on the South Coast. The *Inca* Periods are again characterized by simple pit burials, and shaft-over-chamber tombs. The unique burial towers in the Lake Titicaca region may be *Inca* or even later.

# ENGINEERING

By Wendell C. Bennett

## GENERAL

In South America, any discussion of engineering works and principles is largely limited to the Central Andean region of Perú and Bolivia, since only in this area were large-scale public construction works erected which would involve superior engineering skills. Elsewhere, certain mechanical principles are known. The principle of the lever is widely utilized for raising posts and for the making of dead-fall and other traps. Shores are used for supporting house posts. The principle of the inclined plane must have been utilized in some of the frame construction work of the Amazon. Rollers are used for canoe portage and for transportation of other heavy objects. The principle of torsion is used in some of the manioc squeezers. Likewise, some application of engineering principles are used in the construction of roads and bridges.

Among the southern hunting groups of the Archipelago, Patagonia, and the Pampas, and among most of the semihunters of the Chaco and east Brazil, there is practically nothing that can be included under the category of engineering. In the Tropical Forest area engineering is largely limited to the building of frame houses and bridges. In post-European times many tribes have adopted certain mechanical devices, such as grinding mills, in those areas where sugarcane can be raised. However, such devices are clearly of European origin.

Throughout South America in pre-European times some general principles of great importance were totally unknown, thus limiting engineering skills. Outstanding is the lack of knowledge of the wheel. Some rollers were used, and spindle shafts with disklike whorls vaguely suggest a wheel, but actually no application was ever made of the principle of rotation on a fixed axis. Another notable lack was the true arch, with its primary keystone, which was a serious handicap in the development of architecture. Likewise, power sources other than manpower were virtually unknown. It is true that the utilization of water power, wind power, and the like, depend basically on knowledge of the wheel. However, the domesticated llamas and alpacas were never utilized as draft animals, but only for transportation of light cargoes. A final lack is a knowledge of iron or steel, and their many advantages in construction work.

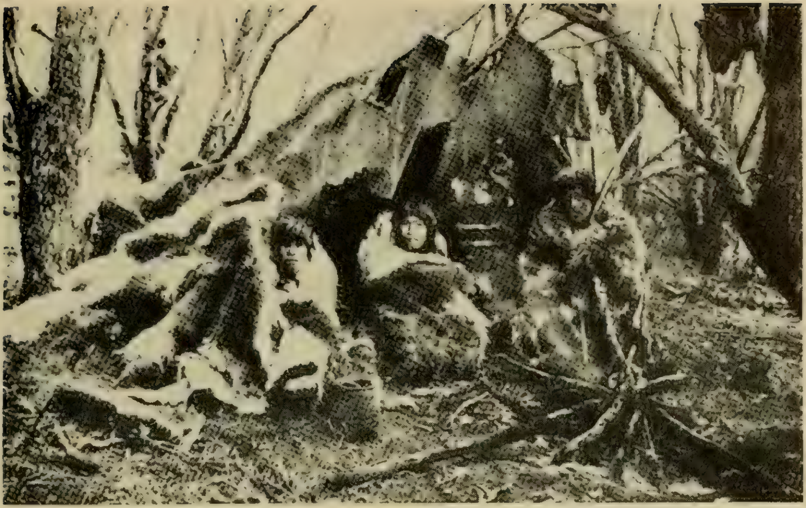
In the following discussion of engineering subtopics most of the references are to the Central Andes, although other areas are included where possible. Even in the Central Andes most of the information is from archeological sources. In some cases reference to a specific archeological period can be made; in others the references are more general.

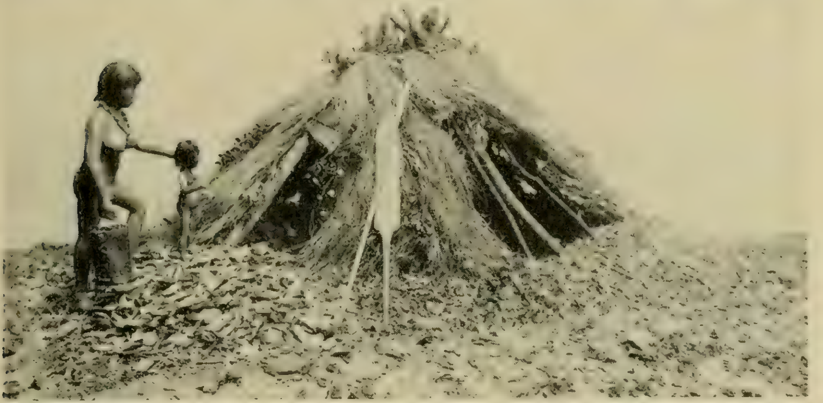
### ROADS

The simplest form of trail markers are the deliberately broken twigs and the blazed trees which guide the Indians of the Guianas. Many tribes in the Amazon region clear narrow paths around their villages. None of these, properly speaking, is a road. However, in east Brazil the *Canella* and other *Timbira* tribes maintain true roads which lead out of the villages in four directions. The roads are cleared to a width of 23 feet and may be as much as 10½ miles in length. They are used not only as highways but also for ceremonial log races. The *Camayura* of the upper Xingú also clear two wide avenues as approaches to their villages.

In the swampy terrain of the Mojos-Chiquitos region of eastern Bolivia earth causeways from 2 to 9 feet in width are built up between the villages. Wider causeways are built between two navigable streams and serve, with the aid of log rollers, as portage for canoes. Banked roads are mentioned for the *Warrau* of the Guianas, who also live in a marshy terrain. In the Portuguesa and Barinas districts of Venezuela extensive causeways are found which are constructed of pounded earth, but are not stone lined or paved. In fact, outside of the Andean region, stone-paved roads have only been discovered on the Island of Santo Domingo in the West Indies. In the Northern Andes short stone-paved roads are found in the *Tairona* villages of Santa Marta, Colombia (pl. 10, *bottom*), but elsewhere in Colombia and Ecuador the cleared paths and roads are without elaborate artificial construction work. In the Southern Andes the *Araucanians* built no roads, but in North Chile the *Atacameño* made roads up to 3 m. in width which were lined, but not paved, with stone. Similar roads were made by the *Diaguita* of Northwest Argentina, since they, too, were within the sphere of *Inca* influence.

In the Central Andes, the *Inca* were famed for their roads (pl. 10, *top*). It is highly probable that roads were built in much earlier periods, but archeological confirmation of this is lacking. The *Inca*, however, maintained a network of roads which covered the four prin-





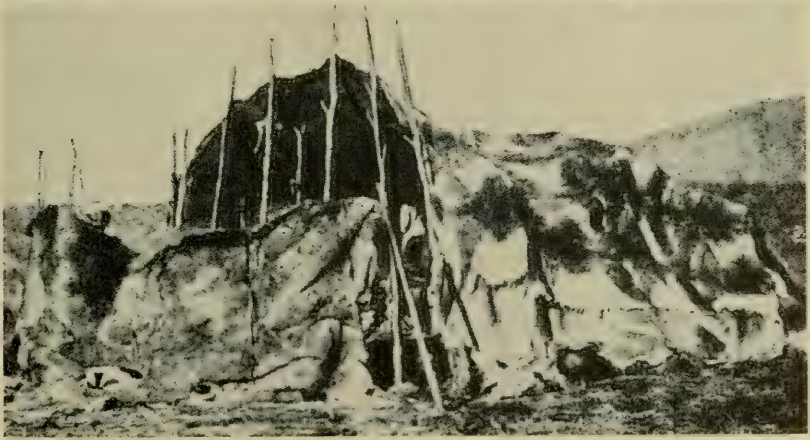


Plate 1.—**Ona, Yahgan, and Tehuelche dwellings.** *Top: Ona* windbreak. *Center:* Model of a *Yahgan* beehive, or domed hut. *Bottom: Tehuelche* toldo. (*Top*, after Lothrop, 1928, fig. 15, from Alberto M. de Agostini, I Miei Viaggi nella Terra del Fuoco; *center*, Courtesy American Museum of Natural History; *bottom*, after Outes and Bruch, 1910, fig. 114.)

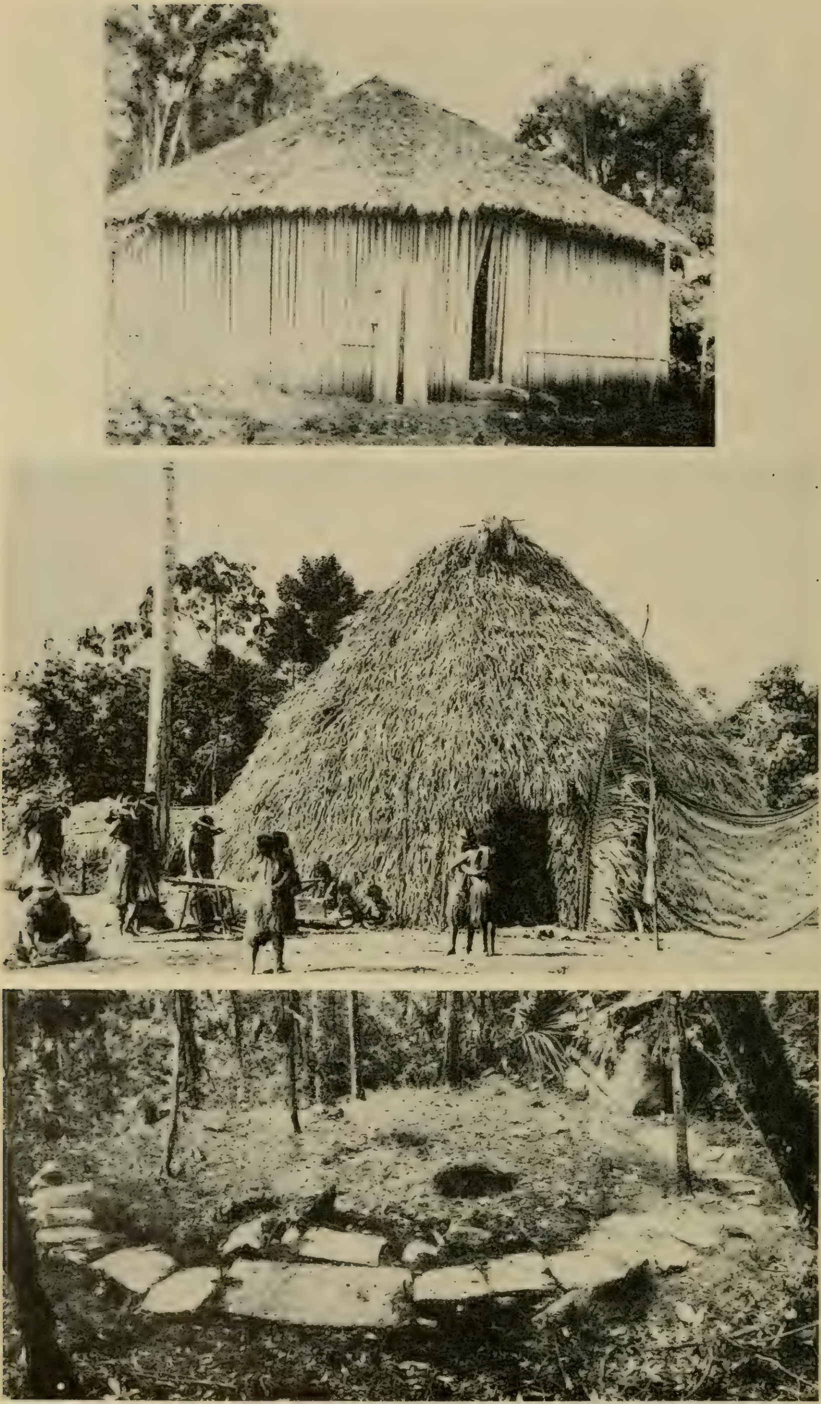


PLATE 2.—**Houses and house sites of the forest regions.** *Top: Jivaro. Center: Yagua* community house. *Bottom:* Archeological house site or stone ring of the *Tairona.* (*Top,* after Karsten, 1935, pl. 17; *center,* after Fejos, 1943, pl. 4; *bottom,* after Mason, 1931, pl. 41.)

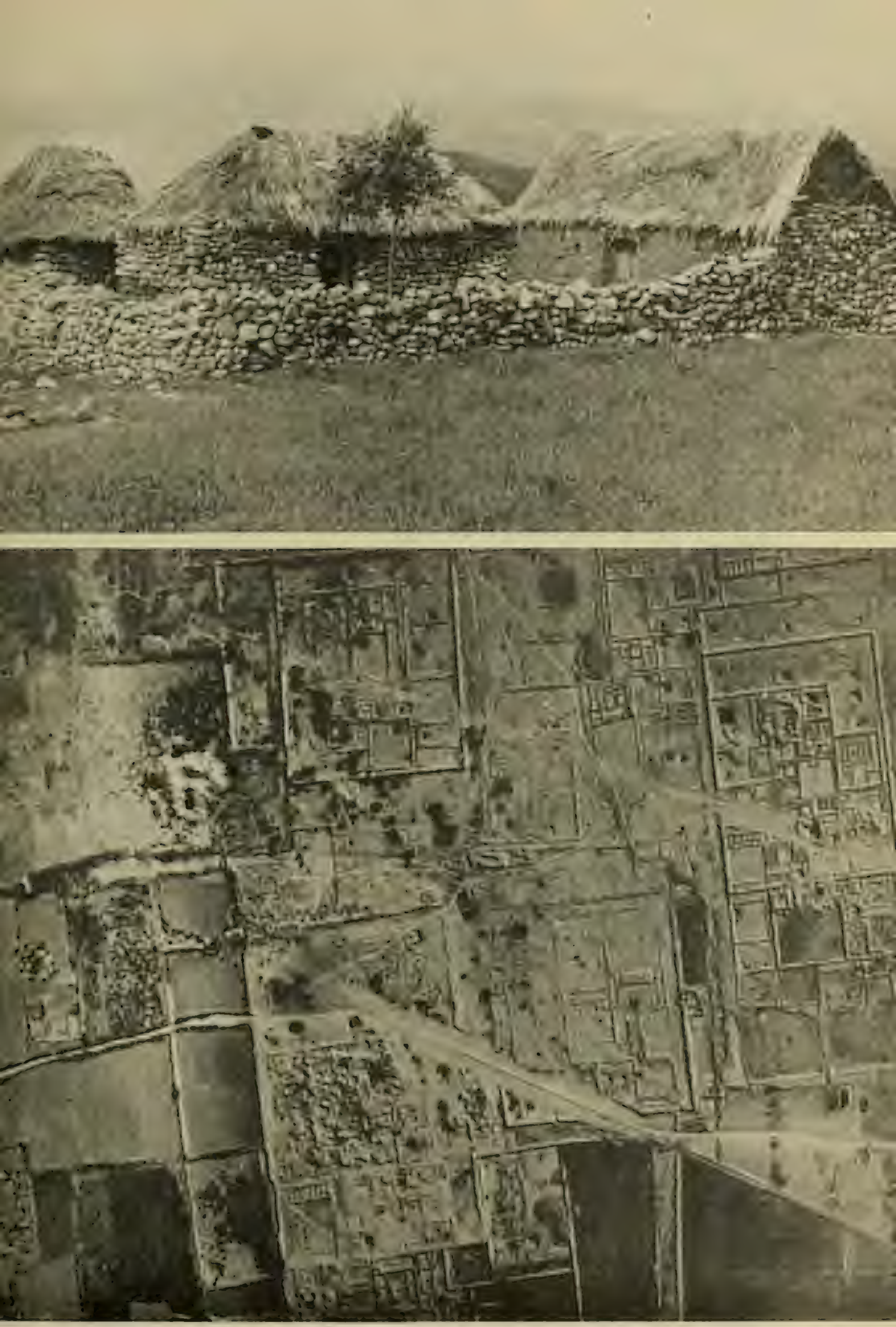


PLATE 3.—**Andean houses and communities.** *Top:* Modern stone and thatch houses of the *Quechua.* *Bottom:* Air view of part of the Late Chimu city of Chanchan. (Courtesy the American Museum of Natural History.)

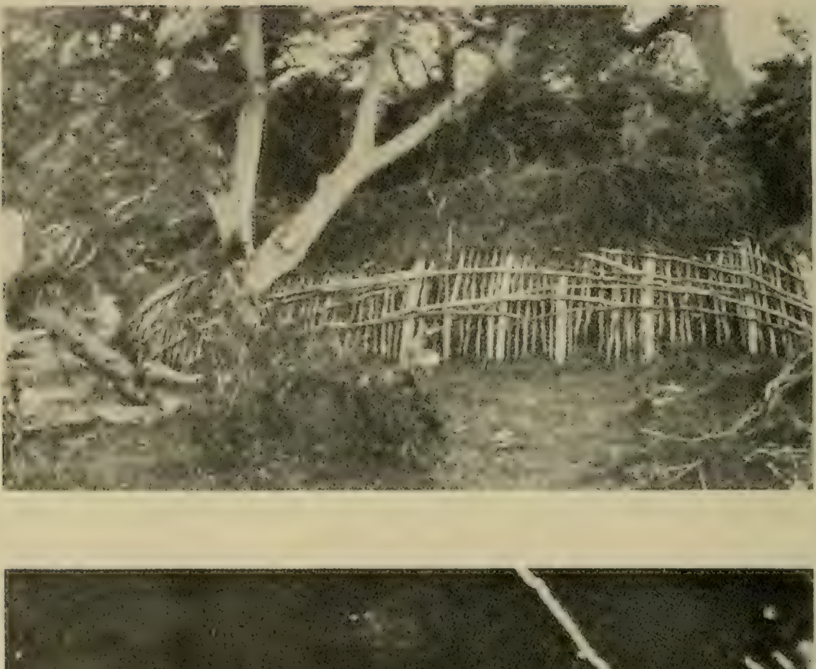


PLATE 4.—**Yahgan Kloketen lodge. Puerto Mejillones, Navarino Island.** Exterior and interior views. (After Lothrop, 1928, pl. 14.)

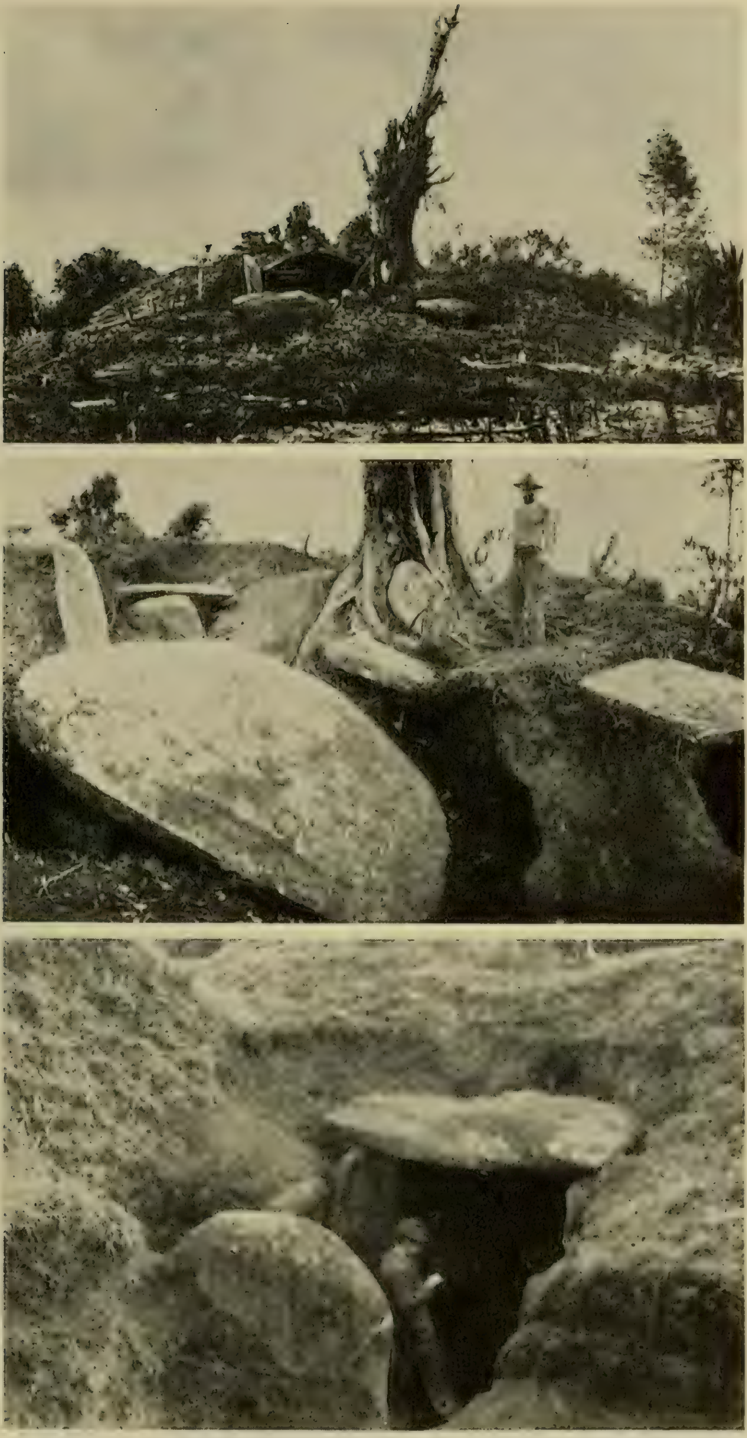


PLATE 5.—**San Agustín structures.** *Top* and *center:* Two views of a temple. *Bottom:* Tomb. (*Top* and *center*, after Preuss, 1929, pl. 14; *bottom*, courtesy Yale University.)

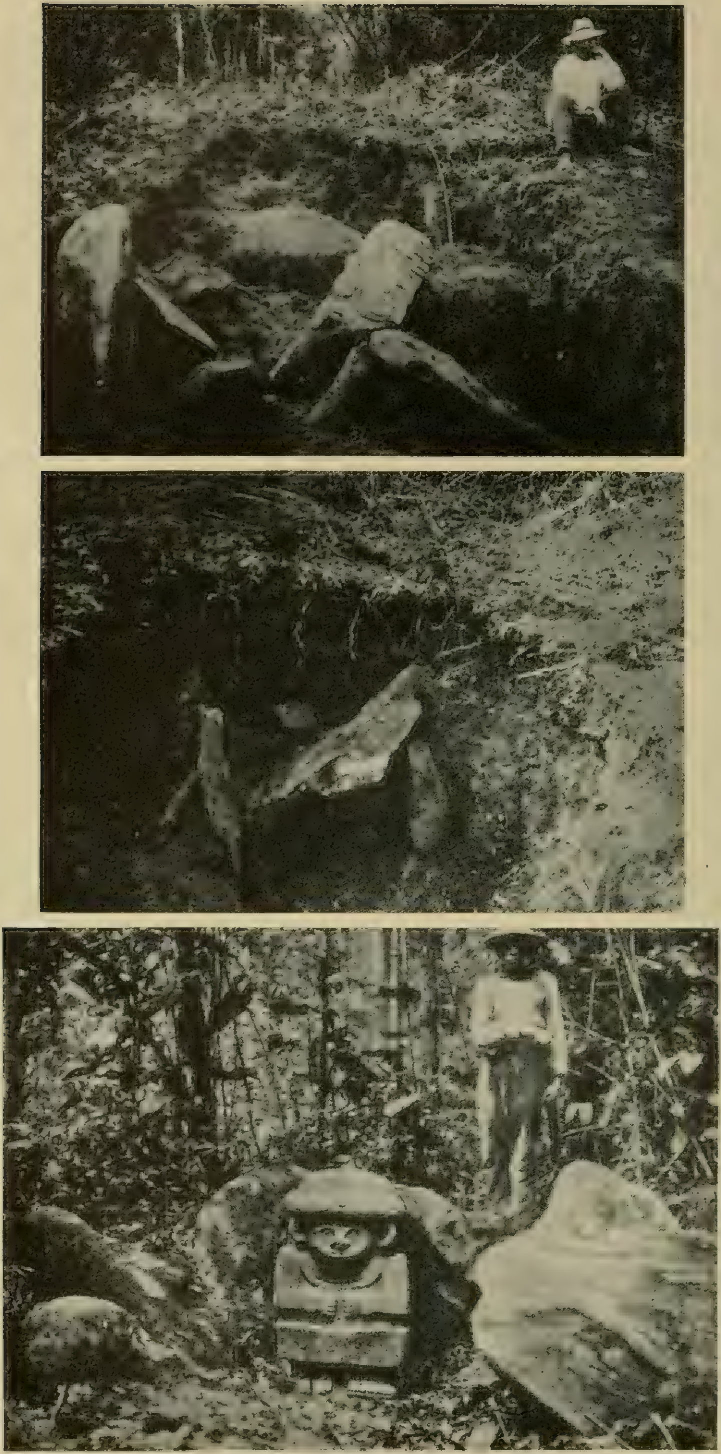


PLATE 6.—**San Agustín shrines.** (After Preuss, 1929, pls. 57, 79.)

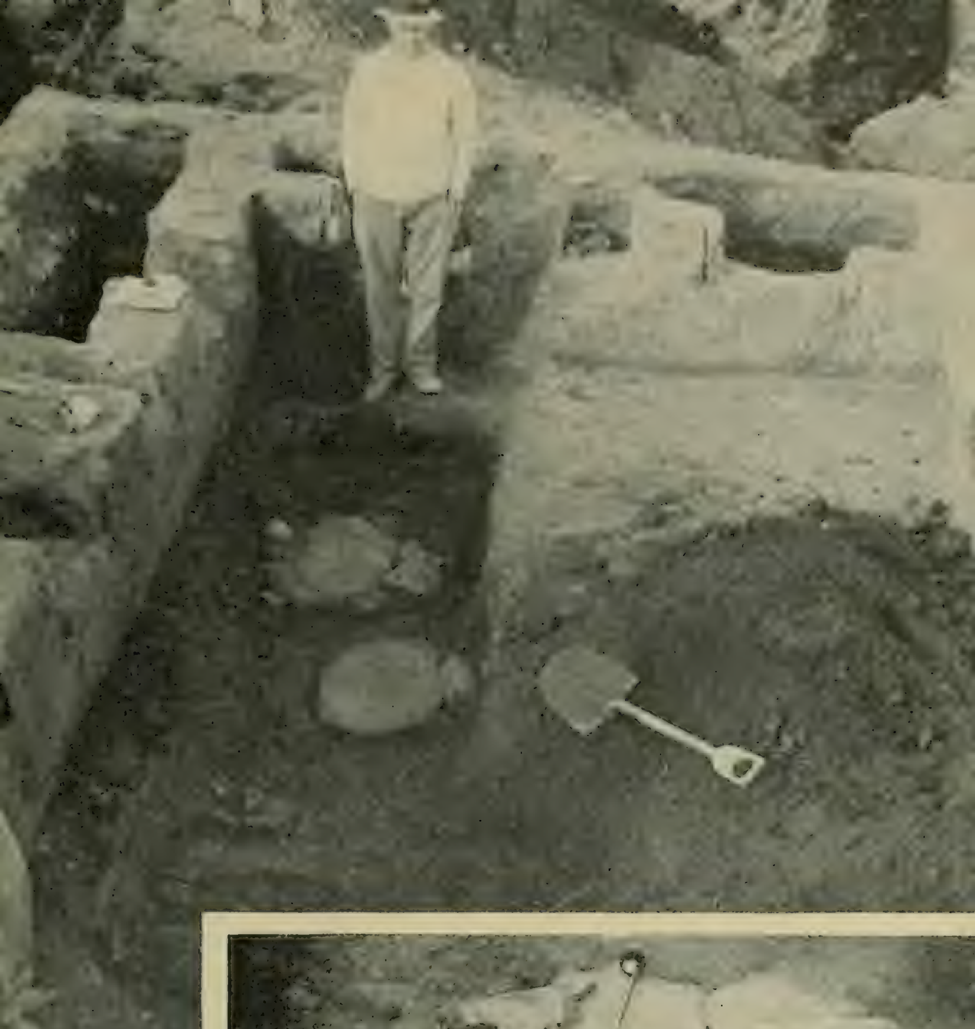


PLATE 7.—**Burial types in Bolivia.** *Top:* Chiripa floor burials. *Inset:* A slab-covered burial at Arani. (Courtesy American Museum of Natural History and after Bennett, 1936, fig. 2.)

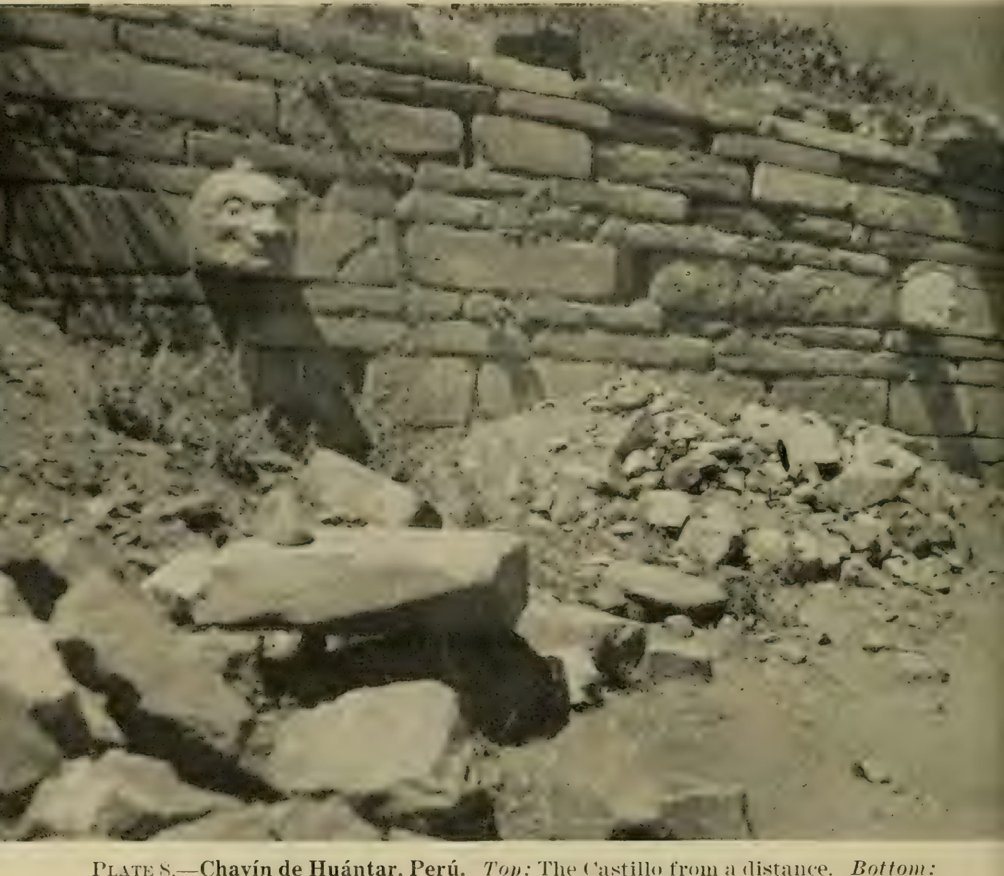


Plate 8.—**Chavín de Huántar, Perú.** *Top:* The Castillo from a distance. *Bottom:* Carved feline tenon heads set in Castillo wall. (Courtesy American Museum of Natural History and William Duncan Strong.)

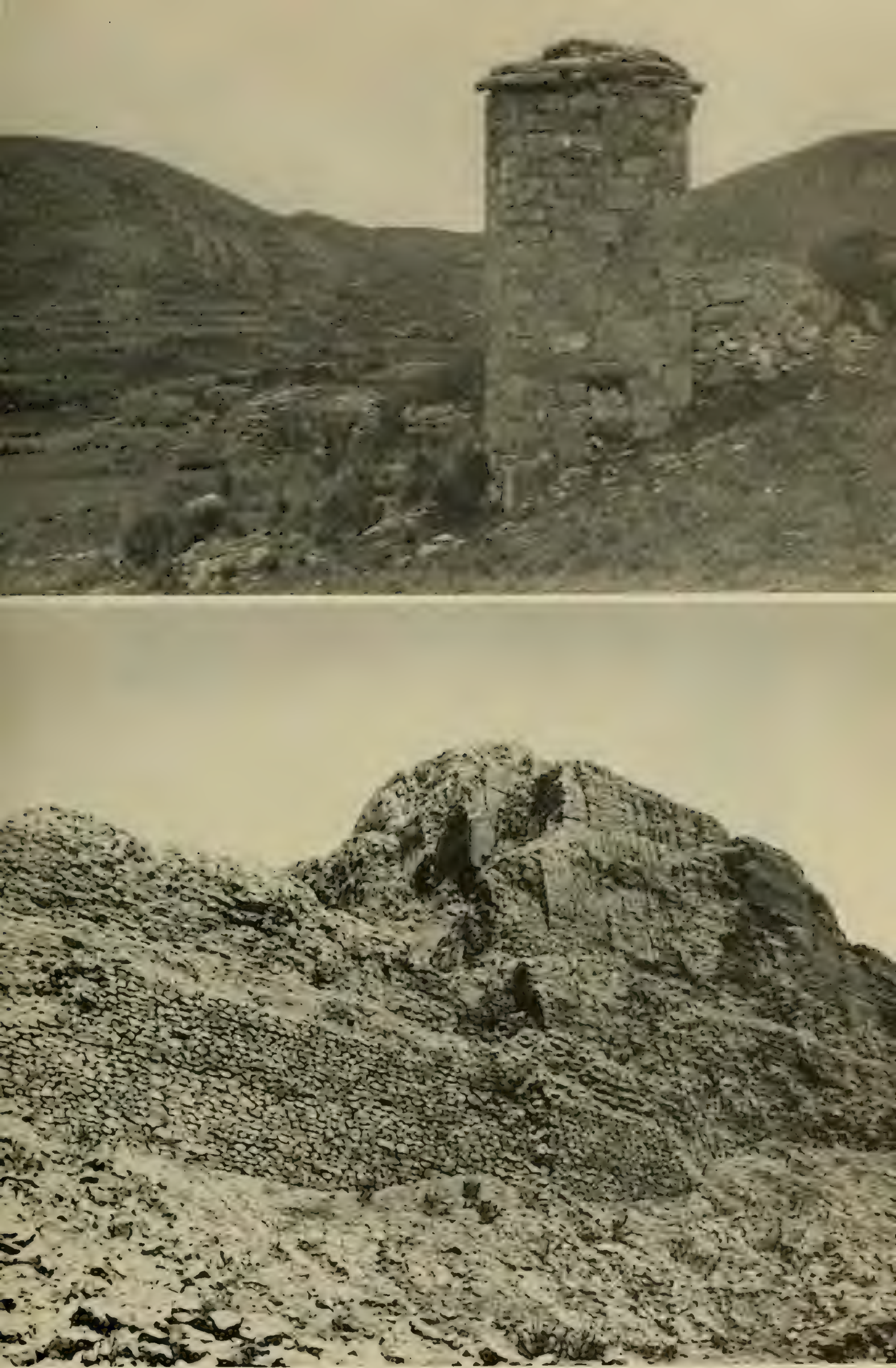
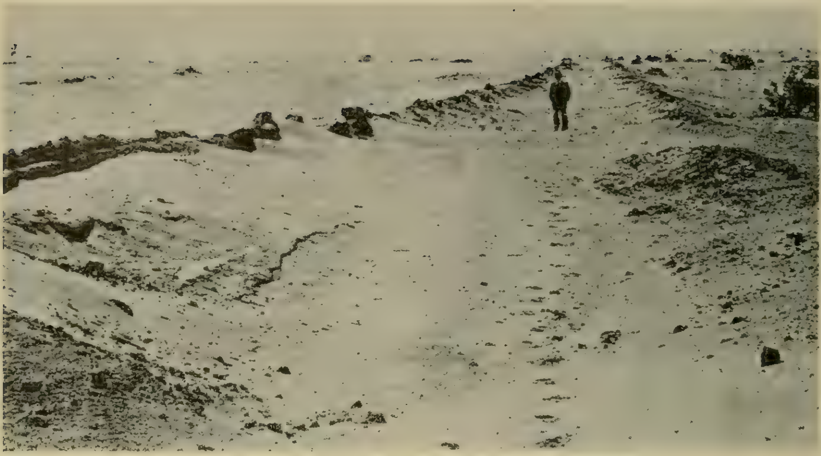


PLATE 9.—**Andean structures.** *Top:* Chullpa tower of rock in the Bolivian Highlands. *Bottom:* Mochica pyramid of adobes on stone foundation on the Perú Coast. (Courtesy American Museum of Natural History.)



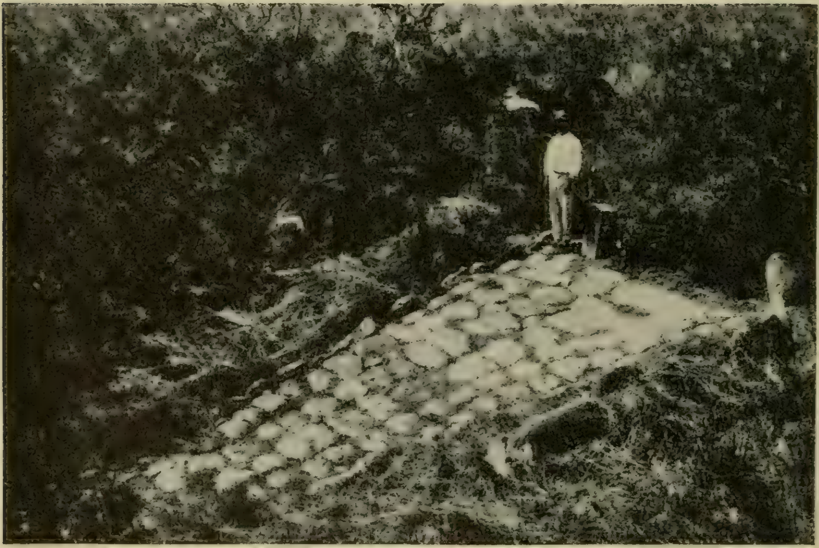


PLATE 10.—**Prehistoric Andean highways.** *Top:* Road crossing the desert between Jequetepeque and Zaña Valleys, Perú. *Bottom: Tairona* paved road or path at Sabana de Limón. (After Kroeber, 1944, pl. 31; and Mason, 1931, pl. 17.)

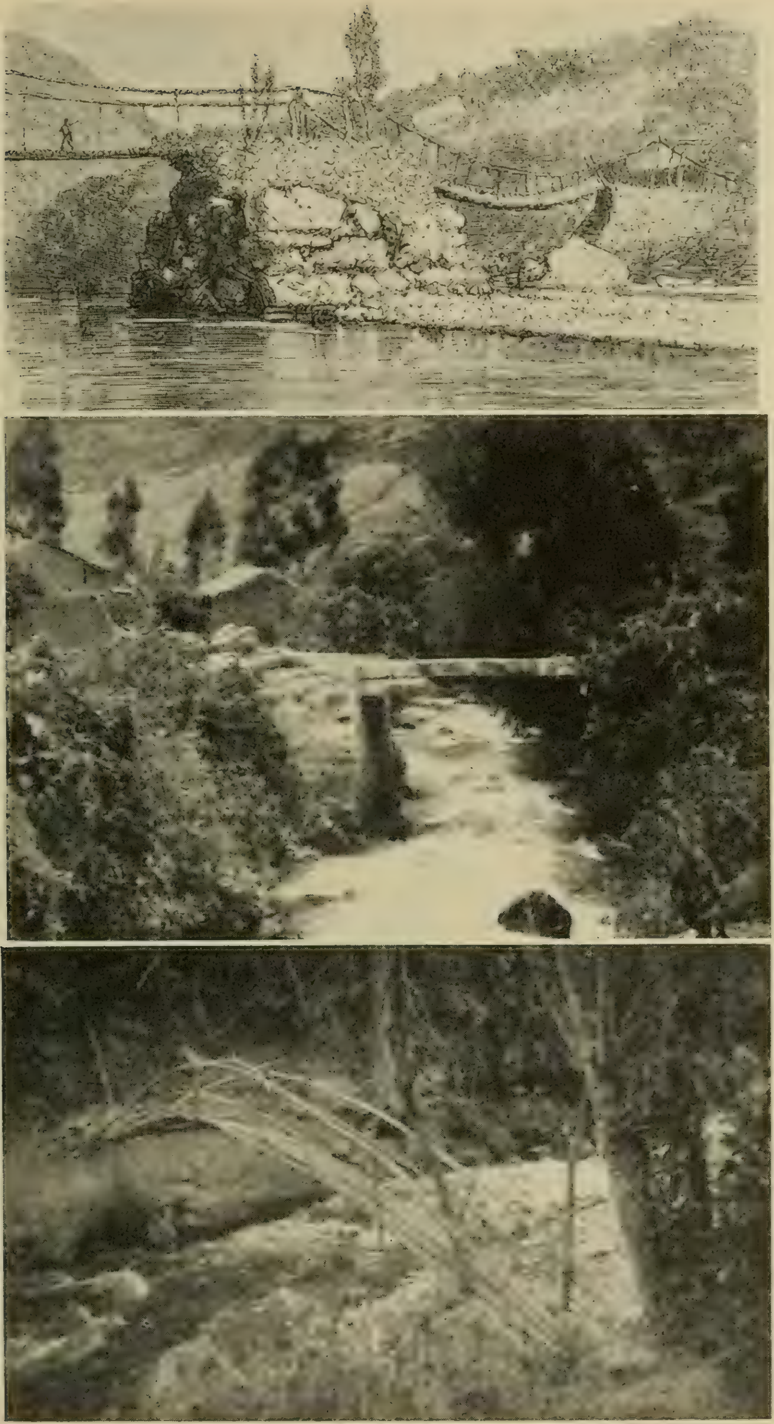


Plate 11.—**Native bridges in the Andean area.** *Top: Inca* suspension bridge at Ollantaytambo. *Center: Inca* stone bridge at Chavín. *Bottom: Piáez* foot bridge of bamboo, supported by cables, across Rio Bolo, Colombia. (After Squier, 1877; others, courtesy Donald Collier and Gregorio Hernández de Alba.)

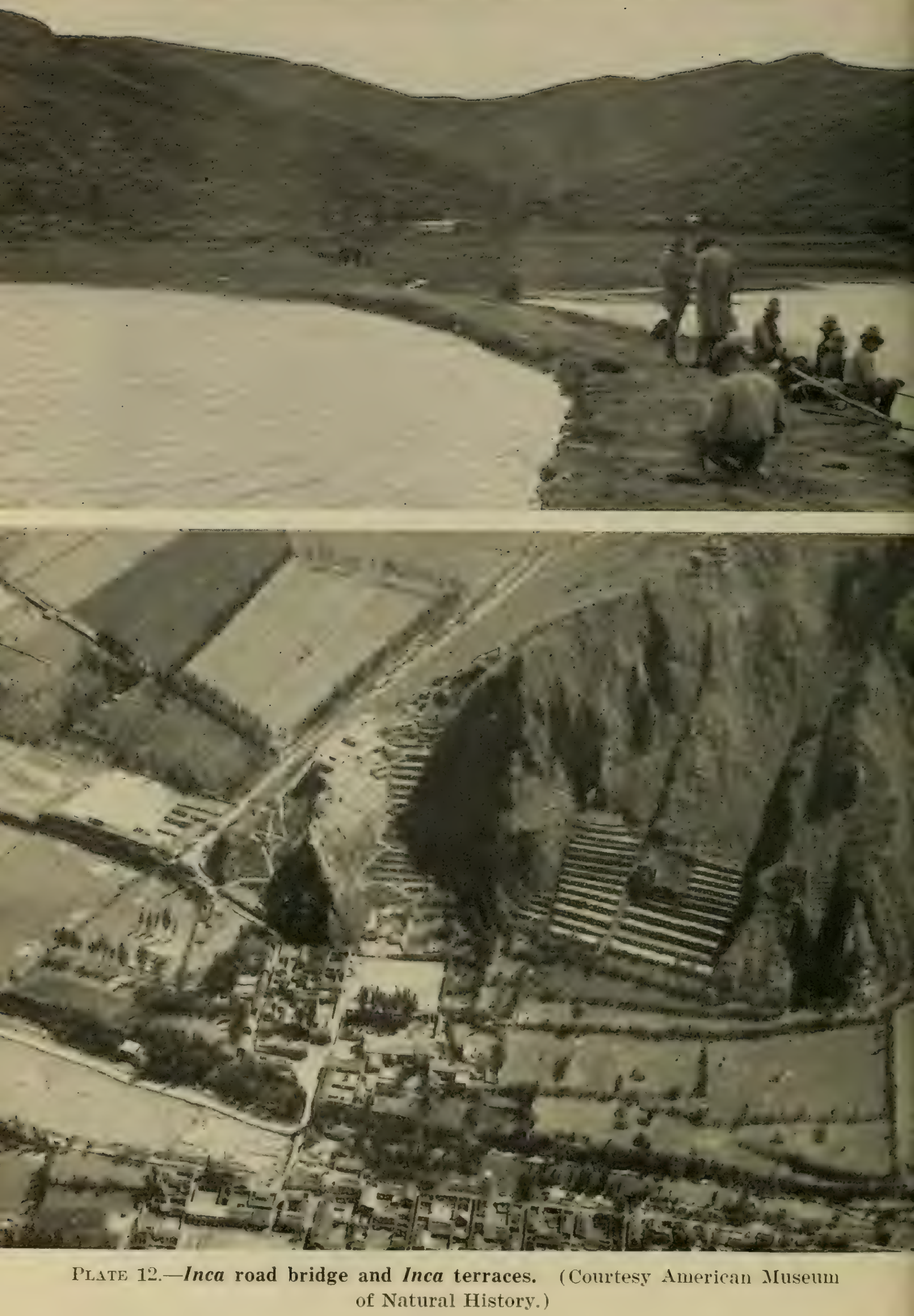


Plate 12.—*Inca* road bridge and *Inca* terraces. (Courtesy American Museum of Natural History.)

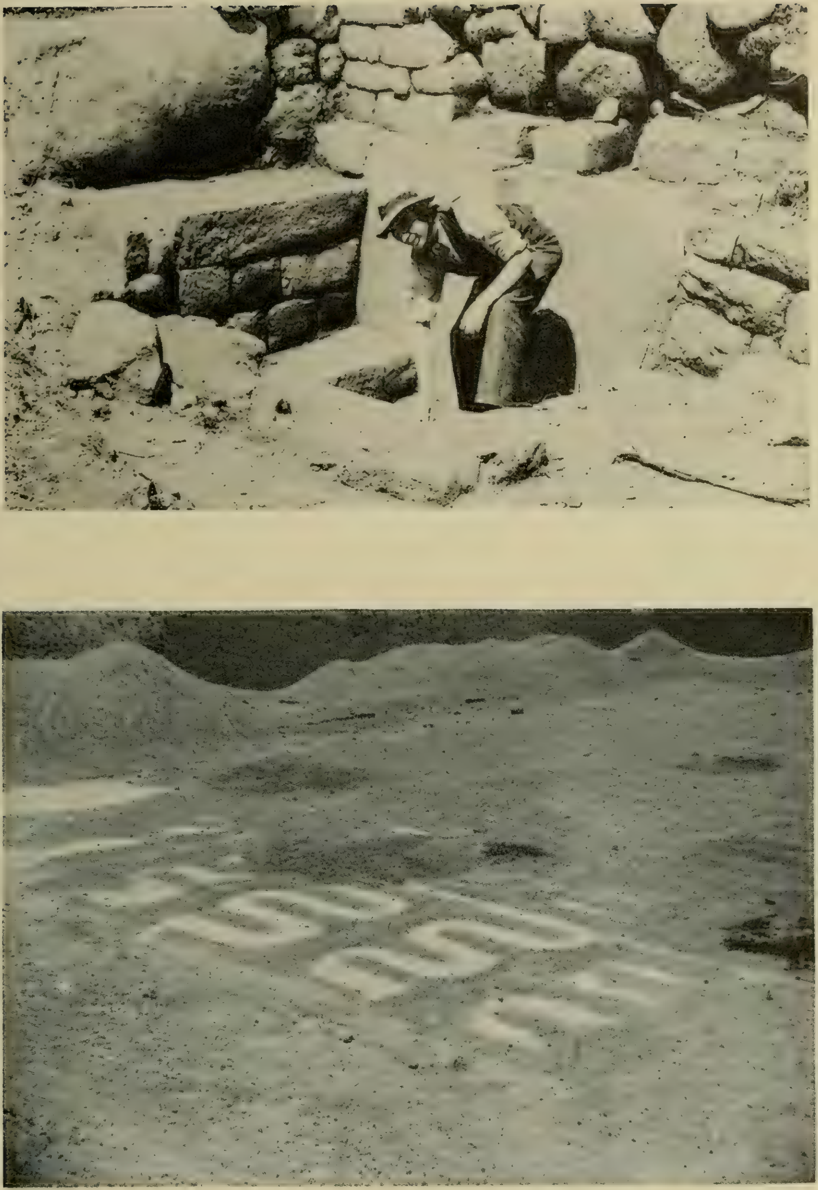


Plate 13.—**Prehistoric Peruvian engineering.** *Top: Inca* bath at Choquesuysuy. *Bottom:* Chimu irrigation system at Chanchan. (After Fejos, 1944; and courtesy Yale University.)

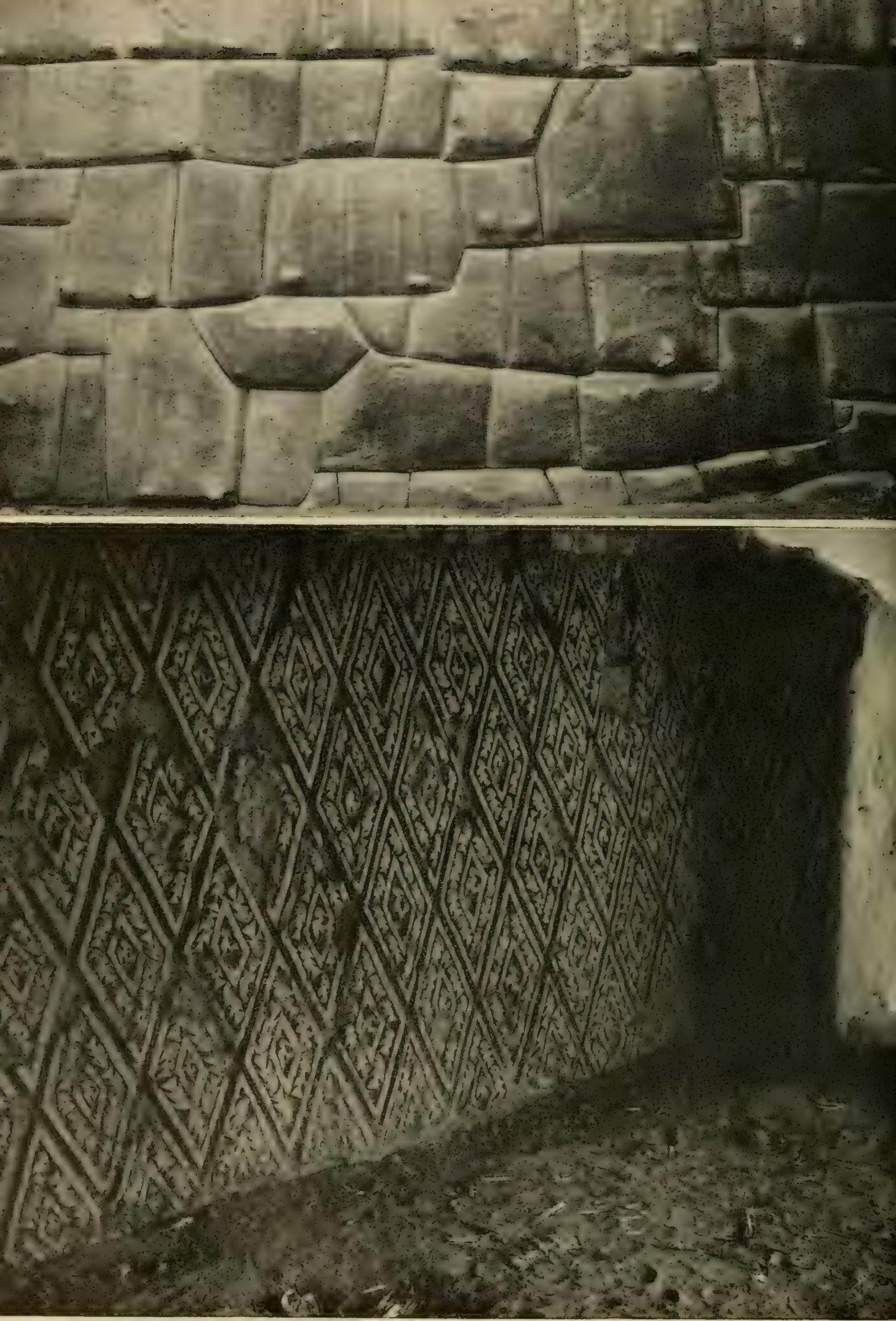


PLATE 14.—**Prehistoric Peruvian walls.** *Top: Inca* masonry. The protuberances on the stones were to facilitate moving them. *Bottom:* Chanchan (Chimu Period) stucco arabesque. (Courtesy American Museum of Natural History.)

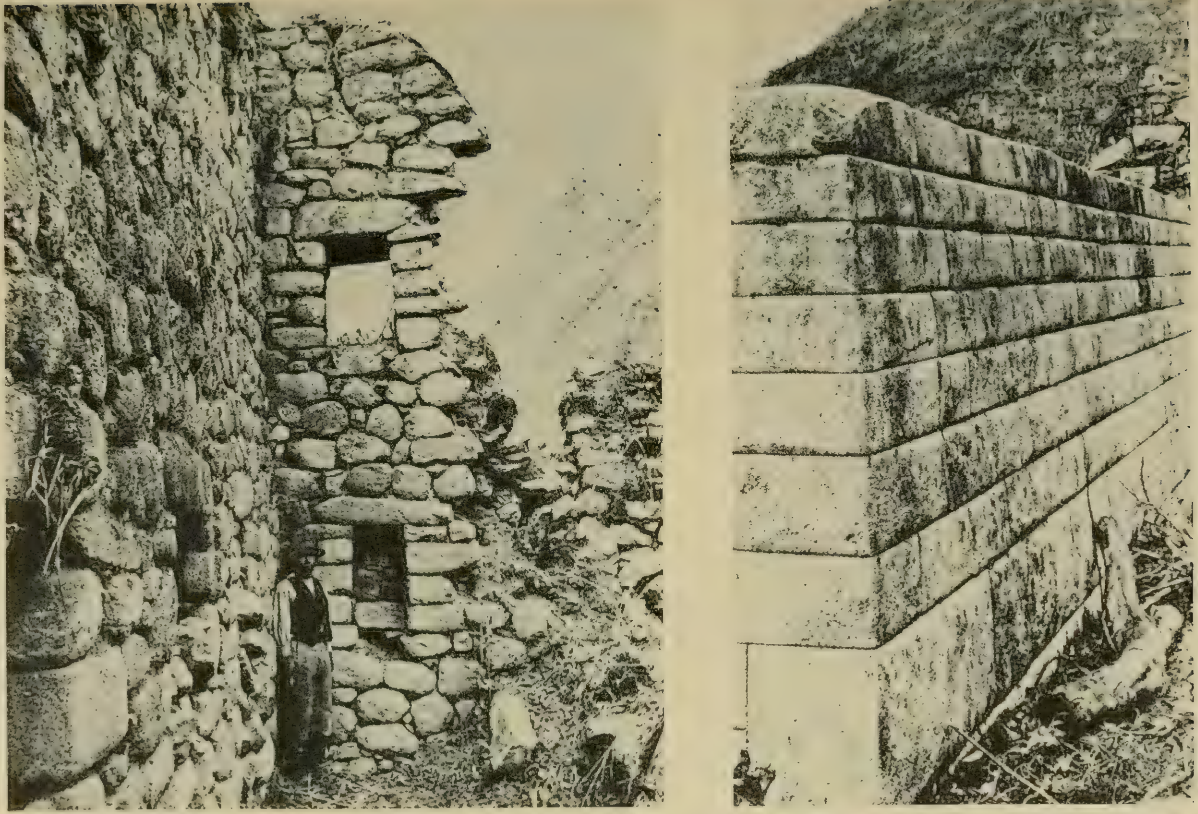


PLATE 15.—***Inca* architecture.** *Left:* Window and niche at Chocha Bamba. *Right:* Magnificent example of coursed masonry at Macchu Picchu. (After Fejos, 1944, pl. 40; and Bingham, 1930, fig. 62 b.)

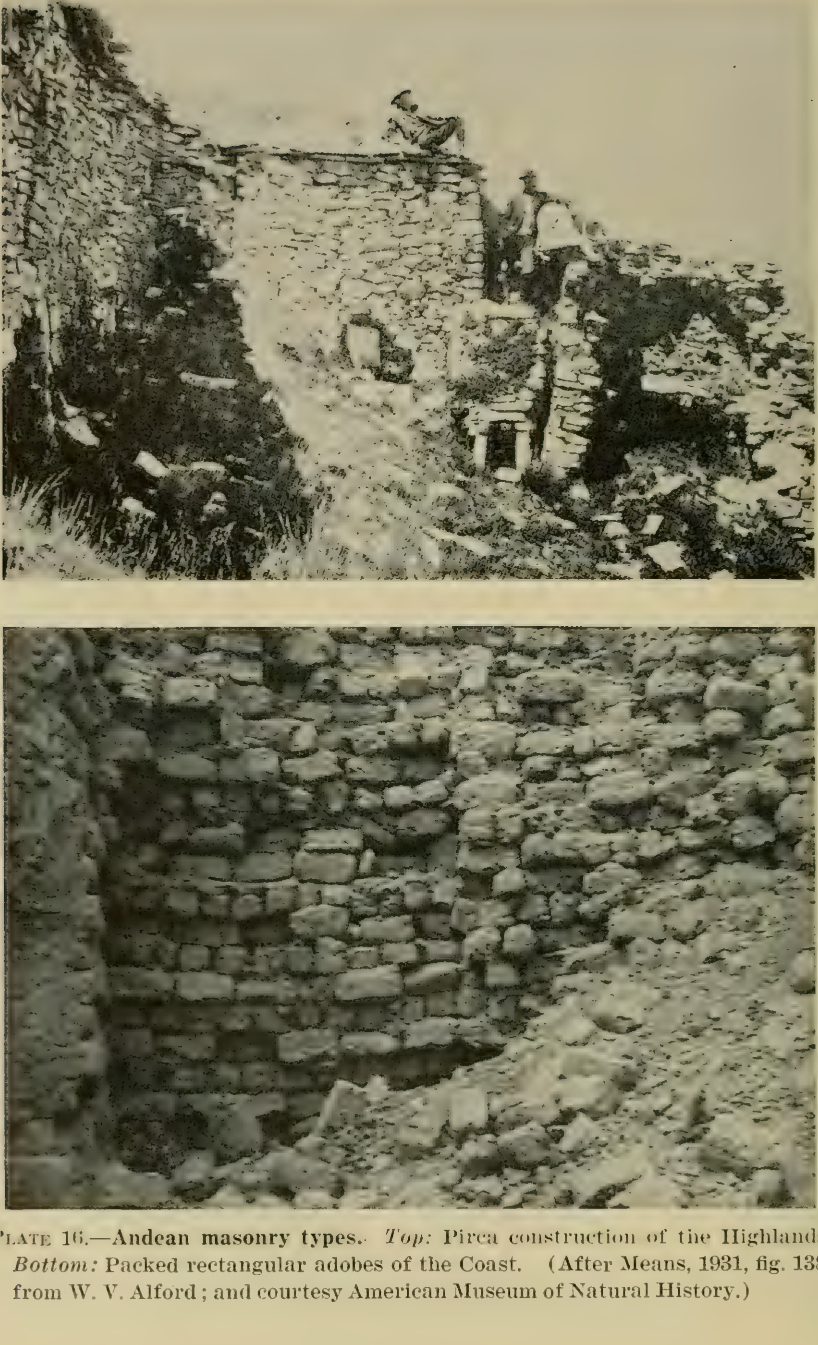


PLATE 16.—**Andean masonry types.** *Top:* Pirca construction of the Highlands. *Bottom:* Packed rectangular adobes of the Coast. (After Means, 1931, fig. 138, from W. V. Alford; and courtesy American Museum of Natural History.)

cipal divisions of their Empire. The Chinchaysuyu system extended north through the mountains from Cuzco to Vilcas, Huánuco Viejo, Cajamarca, Quito, and Huaca. A side branch went to Pachacamac and from there up the Coast of Perú to Tumbes in the north. The Collasuyu system went south from Cuzco, passing Lake Titicaca and Lake Poopó in Bolivia, then inland to Chuquisaca, Santiago del Estero, La Rioja, and Mendoza in Northwest Argentina, and then westward to the coast of Chile. A branch line ran to Arequipa and from there south to Calama, Copiapó, and the Río Maule in Chile. The Cuntisuyu system connected Cuzco and the Nazca region on the South Coast of Perú, and the Antisuyu system extended east of Cuzco into the Amazon drainage. These roads were used by the army, by travelers, by llama transport herds, and by the famous relay messenger runners. Inns, storage houses, and sentry posts for the runners were located at intervals along the roads. The roads ran in as direct a line as possible. In the mountains, they were narrow, about 3 feet in width, and either stone-paved or lined with walls. Where the grades were steep, steps were cut out of the native rock, or the roads were zigzagged. Culverts were roofed with stone slabs, and in marshy places causeways, some 15 to 20 feet in width, were built up of sod and paved with stone. Rarely, tunnels were cut through the hills for short distances. On the Coast, the roads were as much as 12 or 15 feet in width, and lined with walls. Across desert stretches, posts were set at intervals to mark the course of the road. Everywhere, the bridges, described in the next section, were an important part of the network of roads.

## BRIDGES

One of the simplest and most widely distributed types of bridge in South America is a tree trunk laid across a stream. This is found, for example, among such widely distributed tribes as the *Tupí-Cawahíb* and the *Witoto* of the Tropical Forest; the *Northern Cayapó* of east Brazil; the *Popayán* of Colombia; and the *Araucanians* of Chile. Such logs are also used as bridges across swampy places in the northwest Amazon and in east Brazil. The *Timbira* of east Brazil make their bridges longer by supporting the logs on props in the water. A hand railing may be added, both in east Brazil and in the Guianas.

Another common type of bridge consists basically of a cable of lianas stretched across a stream. This may be used simply for something to hold on to while wading, as illustrated by the *Sirionó* and the *Botocudo*, or two or more cables may be used as a swinging bridge. One cable serves as a foot path for tight-rope walking and the other one or two as hand railings. Examples of these bridges are found among the *Botocudo* and in the Guianas. In the Central Andes, cable bridges usually have a floorway of cross sticks and this type is also reported for the *Popayán* of Colombia.

The *Páez* of Southern Colombia make an arched bridge of stout bamboo poles which are firmly planted in the banks on each side of the stream and then bent over and joined in the center (pl. 11, *bottom*). A flooring of cross sticks is lashed on two of these bamboo arches, and hand railings are added to both sides. The bridge is reinforced with stone wedges, bamboo braces, and vine guides. Today a thatched roof is built over the bridge for further protection.

In the *Inca* Period, some rivers, like the Santa, were crossed by ferries of balsa or reed canoes. However, four types of bridges were constructed in connection with the road network. The first was a bridge built of long log beams to which cross-bars and branches were added to form a solid construction. In some places, 9- to 12-foot long stone slabs were used in place of the log beams (pl. 11, *center*). A second type was the famous *Inca* suspension bridge (pl. 11, *top*). Four masonry blocks, two on each bank, were built as supports for the three floor cables and the two hand railings. These cables were as much as 16 inches in diameter and were made of pliable twigs twisted and braided together. Cross-poles, sticks, and mud formed the solid floor for the bridge, and ropes or vines were interlaced between the floor and the guard rails. No guides were used, so that the bridge sagged heavily and swung in the breeze. A third type of bridge was a pontoon construction, consisting of a row of balsa canoes with a roadway built over the top (pl. 12, *top*). The final bridge type was like a breeches buoy. A pillar was built on each side of a stream and a single cable stretched between, on which a basket with a loop handle was drawn back and forth by means of guide ropes.

## STAIRWAYS

In parts of the Guianas, cables of liana are hung over cliffs to assist in the ascent, and in the northwest Amazon, steep banks are ascended by means of notched logs both with and without railings. However, true stairways are common in the Andes. Stone steps are a characteristic feature of *Tairona* villages in Colombia, and throughout the Central Andes, stone paved stairways, stairs cut out of living rock, and adobe stairways are common on steep slopes and in the villages. Crude steps of field stones are still built by the modern *Aymara*.

## TERRACING

Stone-faced terraces for agricultural or other purposes are common in the Central Andes, Northwest Argentina, and North Chile. In Colombia, agricultural plots are terraced, but without stone facing.

Throughout the Highlands of Peru (pl. 12, *bottom*) and much of Bolivia, the narrow agricultural terraces cover the slopes of the hills, and are faced either with rough field stone, or, more rarely, with dressed stone. Around the region of Cuzco, the terraces are particularly extensive. Most terraces follow the contours of the terrain, and some are also arranged for the distribution of water in the irrigation systems. Many of the terraces in use today were constructed in the pre-Spanish periods.

Terracing as a technique in construction work is covered elsewhere.

### CANALS AND IRRIGATION

It is highly doubtful that artificially controlled irrigation was known outside of the Central Andes in pre-Columbian times, although artificial canals were made elsewhere. For example, canals connecting navigable streams were made in the Mojos region of eastern Bolivia, by excavating ditches parallel to the raised causewaylike roads. One of these canals is over 6 m. wide and 2,000 m. long, and another is reported to be about 10 miles long but only a few feet in width. The Casiquiare canal, between the Orinoco and Negro Rivers in the northern Amazon, may well be an artificial Indian construction.

In the Central Andean region, irrigation systems are unquestionably old (pl. 13, *bottom*). An artificial causeway over 15 m. high in the Chicama Valley is identified with the early Mochica Period. This causeway conducts an irrigation canal across the wide mouth of a side valley in order to reach the flat valley below. In many valleys, irrigation ditches many miles in length follow the contours of the side hills, and maintain a carefully calculated grade. Some of these are merely open ditches; others are stone-lined and reinforced by terraces on one side. Where necessary, large stone blocks and even grooved canal stones were employed. The water was distributed by an intricate system of side canals which were closed by stone-slab doorways. An irrigation system was frequently combined with the stone-faced agricultural terraces. The water was introduced at the top and ran down the various terraces. At some sites, particularly around Cuzco, water was conducted into the buildings by well-constructed, stone-covered canals, like pipe lines. The *Inca* also channelized rivers by means of retaining walls. Throughout the town of Cuzco the stream beds were paved with stone.

In many of the large constructions, drainage was important. At Tiahuanaco, the terrain is swampy in the rainy season, and stone-lined and covered drainage canals were built under ground to carry off the excess water. The grooved canal stones found in many parts of the ruins of Tiahuanaco, Chavín, and Cuzco, may have served in the drainage system as well as in the distribution of water around the village. The great fortress of Sacsahuaman, near Cuzco, has carefully cut drains through the stone-faced terrace walls to prevent seepage erosion of the earth behind.

Stone-lined baths are a common feature of *Inca* buildings (pl. 13, *top*). In the Highlands, the baths are frequently arranged in a series, so that the water enters the topmost and descends through five or six others at lower levels. At San Agustín, Colombia, the baths are cut out of the native rock in a stream bed and ornamented with carved figure designs. Reservoirs are also found in many parts of the Andes. In the Cali region of Colombia, the reservoirs are built of banked-up earth, but in the region of Santa Marta, they are stone-lined.

Around Lake Titicaca, in the past as today, canals were cut through the marshy shore to serve as approaches for the balsa canoes. Likewise, in a few places, rough stone ramps were built for landing piers. Similar landing canals and perhaps piers are reported for the West Indies.

## MAPS AND MODELS

Simple ways of representing the topography of a region were probably known by many tribes of South America, although detailed accounts are rare. Some tribes on the upper Xingú drew rough geographical maps on the sand. Rivers were depicted by zigzags, rapids by transverse lines, huts by simple circles, and villages by circles arranged in a ring. Also symbols indicating that certain fish were abundant in a stream were drawn on the sand bank nearby. Some authors claim that rock carvings, particularly those around the Río Casiquiare in Venezuela, represent maps.

In the Central Andes, the *Inca* made clay relief maps of their Empire. Likewise, clay models were made of irrigation systems, lay-outs of towns, and road systems. Models of buildings were made in both clay and stone, and some of these have been preserved in museum collections. Some of the carved stones of the Tiahuanaco Period may have been models of temples. One large flat stone is cut out in such a way as to suggest a raised terreplain, with an interior sunken court which is entered by a stairway on one side and two smaller stairways on the opposite side. In general proportion and lay-out, this model suggests the Calasasaya temple at the ruins of Tiahuanaco.

## CONSTRUCTION MATERIALS

The building materials employed in South America have already been described under the topic of Habitations, but they are again treated here from the engineering viewpoint. Logs and poles are the principal construction materials throughout the Amazon and in the

Northern Andes. The logs are not elaborately prepared for use. The bark is usually removed, and some of the larger logs may be split into several longitudinal sections. Uprights have a fork left, or are notched at the top to receive the ridge poles or house beams, but notching at the sides is rare. Cut-out joints or nails were not employed but the house beams and posts were lashed together. In the Andes logs were used for roofing materials, door lintels, and as wall binders, but most building was with clay or stone. One site in Nazca Valley has numerous rows of forked logs set upright in the sand, but the significance of this "Stonehenge" is as yet unknown.

Mud or clay was a common construction material on the Coast of Perú (pl. 14, *bottom*) and was also used extensively in the Highlands. The *Aymara* and *Uru-Chipaya* still build with cut-out sods, without further modification since the grassy roots in the sod serve as a binder. Puddled-clay, or tapia, is commonly used today as well as in pre-European times. The clay, tempered with grass, sand, or gravel, is stomped between two board walls to form large blocks. These are not moved, but rather are built in position where they are dried by the sun into a concretelike hardness. Some of the blocks at Chanchan ruins measure 1½ m. by 60 cm. by 80 cm.

Clay is most frequently used in the form of sun-baked adobe bricks, which vary greatly in size and shape. The manufacture is essentially the same, however. Fine grained clays are mixed with a temper of sand, grass, gravel, or broken pieces of pottery. The clay is then molded either by hand or by mold into the desired shape, and exposed to the sun for drying. Some of the principal shapes found in archeological sites are described below. Hand-made conical adobes, or variants thereon, are quite common in the earlier periods. Some are true cones, with a flat base about 15 cm. in diameter, 40 cm. in length, 6 cm. at the pointed end. Some are more like truncated cones, or even cylinders rounded at the top. Others approach a hemispherical shape. The term odontiform is applied to conical adobes which have a somewhat wedge shape. The second type of hand-made adobe is a true hemispherical shape, with one side flat and the other curved. A third type is described as cobble-shaped; i. e., lumps of clay modeled by hand into crude balls which vary in size from a double fistful up to about the size of a head. Small, cubelike adobes are a fourth type. A fifth is the rectangular or square adobe (pl. 16, *bottom*), made in a board or cane mold. The variation in size is enormous. At one early Mochica site the average adobe is 39 by 25 by 15 cm. At Chanchan one group of adobes averages 28 by 17 by 11 cm. The *Inca* Period rectangular adobes average 80 by 20 by 20 cm. Such variation does not indicate period differences, since in many sites adobes of different sizes are contemporaneous. A final adobe type is the so-called sugar-loaf, which is a rectangular block, convex on one side. Some of these measure 50 by 30 by 15 cm.

To some extent the adobe types can be arranged in a chronological series, although much of the variation is only an indication of local preference. In general, the adobes of the earliest periods on the Coast of Perú are hand-made variants of the conical shape. A sequence is well established on the North Coast where Coast Chavín Period conical adobes are stratigraphically earlier than the rectangular mold-made adobes of the Mochica Period. On the South Coast of Perú, small conical adobes are characteristic of the Nazca Period. These are replaced later by the cobble shapes, and ultimately, in the Late Periods, by rectangular forms. In the *Inca* Periods, the rectangular and the sugar-loaf types are in general use. The tapia type construction was known in the Early Periods, but was never used extensively until the Late Periods.

Unmodified stone was a common construction material in the Central Andes. Water-worn cobble stones were employed as foundations; buildings were made of the rough mountain stones which split off in irregular shapes; and large natural slabs and boulders were utilized without modification. However, in much of the building the stones were split for better fitting, or the stones were dressed and polished (pls. 14–16). In the building techniques rough stones were used as foundations for adobe walls; stone walls were built up without mortar of any kind; and stones were set in a crude clay mortar, a technique known as pirca construction (pl. 16, *top*). The dressed-stone constructions rarely employed mortar or cement of any kind.

The precise techniques of stone dressing are not accurately known, although much of the process can be reconstructed from indirect analysis. The stones were shaped by pecking with hammers, principally of hematite, and then smoothed by patient rubbing and grinding with sand and water. Round chisels have been found with which holes could be drilled to aid in the splitting of the stones. There is some evidence that the splitting was aided by filling these holes with water and allowing it to freeze. Some stones at the site of Ollantaytambo appeared to have been sawed, but so far no adequate materials for sawing have been found. In many of the irregular stone walls around Cuzco, the stones must have been quarried in the rough, and ground to final shape in situ. Part of this grinding was undoubtedly done with the wall blocks themselves; that is, by rotating one of the upper row of stones on a lower one in order to grind a flat contact. As a result of this process, the upper stone gets a slightly concave surface, the lower one gets a slightly convex surface, thus acting as a binding joint. In some of the better walls, the top of a tier was ground flat before the next tier was started. In brief, whatever the amount of dressing of the blocks at the quarry itself, the final finishing was done during the process of building the wall.

## CONSTRUCTION TECHNIQUES

This discussion of construction techniques is largely limited to the archeological periods in the Central Andes, since it is difficult to summarize the engineering principles involved in the construction of the large Amazonian frame houses. To be sure, the building of these houses would depend on reasonably accurate floor plans. Distances must have been measured by pacing or with special poles, and right angles must have been estimated. It is known that the rafters and beams were first spliced temporarily and, later, more permanently lashed. Some of the houses employed a considerable number of posts and beams in the frame. For example, one house in the northwest Amazon had 6 heavy central posts, 10 secondary posts, 72 roof poles, 76 transverse connecting poles, and 560 bundles of thatch. Undoubtedly some of the house builders were specialists, but whether professional architects existed is not known.

The *Inca* had architects and specialized masons who planned and supervised the construction of public buildings. Probably such specialists existed in much earlier times, judging by such elaborate centers as Chavín de Huántar in the North Highlands of Perú and Tiahuanaco in the Highlands of Bolivia. For example, the Castillo of Chavín is a three-story building with interior galleries, rooms, and ventilation system. The whole building must have been carefully planned and constructed under close supervision. Presumably, the ground-floor galleries, vents, and rooms were first built up with rough stones and roofed with slabs, then the exterior facing wall of dressed stone was made. The spaces between the interior galleries and rooms and exterior facing walls was next filled with rubble, and the foundation for building the second floor was thus completed. It seems probable, both at Chavín and at Tiahuanaco, that mass labor was employed only to assemble materials, and that the actual construction work was done by specialists.

The selection of materials for a construction depended in part upon geographical location. In general, Coast buildings were of adobe; important Highland buildings were of stone. This is not a question of the availability of materials, since stone is abundant on the Coast and adobes can be made in the Highlands. It may reflect a desire for durable buildings, in which case a consideration of the amount of rainfall would be important. For example, the *Inca* used adobe in their Highland house construction, but most of the important public buildings were made wholly or partly of stone. The *Inca* were acquainted with many stone masonry styles, and the selection of a particular technique seems to have depended on the use and purpose of the walls. The gray yucay limestone was utilized for the great polygonal blocks in the foundations of Sacsahuaman. The green Sacsahuaman diorite porphyry was used for polygonal blocks in walls where great solidity was desired. Elsewhere it was employed only for corners. A black andesite was used for the rectangular blocks of some of the finest constructions.

The large building stones used were moved on log rollers by crews of men using pry bars of bronze or wood, and pulling with ropes or slings. Protuberances and indentations were left on the blocks for purchase for the pry bars. The protuberances also served for attaching the slings which were needed not only for dragging the stone to the construction site, but also to aid in the grinding when it was fitted in the wall. The indentations and protuberances on the blocks were either removed in the final grinding process, or they were left as decorations (pl. 14, *top*). The large stones were raised into position by means of earth ramps, some of which can still be seen. The *Inca* had a name for the plumb bob, although the use made of it is unknown. Perhaps a level was made with an equilateral triangle and a plumb bob, since it is certain that a level of some kind was known. The techniques of moving and placing large stones were known in the much earlier periods, judging by the buildings constructed.

The nature of the terrain was a major consideration in the Central Andean architecture. Natural rocky outcrops served as the central cores of some pyramids, and the rest of the building conformed to the contours of the terrain. Cliffs were utilized in building a fortress; large surface boulders effected the plan of construction; and natural caves were incorporated as a building feature. The preparation of a solid foundation was a basic requirement in erecting a building. The surface dirt of a site might be cleared away to the base rock below, or a foundation of solid stone would be carefully laid as a support for the upper, and less durable, walls. On the Coast the foundations for high adobe walls were usually made of rough stones or cobbles. Likewise, in the Highlands, foundation walls of carefully cut and dressed stone were capped with adobe construction. As mentioned above, the weight of the stones in a wall was usually sufficient to hold it together, even without the use of mortar.

In the buildings, particular attention was paid to the facing walls. Even in a well-built solid wall, careful fitting is found only on the facing surface, whereas the back side is apt to be quite irregular. A common type of wall consists of a fitted facing with a fill behind.

This was used mainly for terraces. Free-standing walls may be double-faced, with a rough stone or rubble fill between. Facing walls are made of rough blocks, polygonal blocks and squared blocks. At Chavín, the walls are made with horizontal rows of slabs, alternately thick and thin. At Tiahuanaco the walls are composed of uprights placed at intervals with fitted small blocks between them.

Some of the large adobe constructions on the Coast are nothing but irregular piles of adobes with carefully finished facing walls. However, some adobe pyramids, like the Huaca del Sol at Moche, are composed of a series of columns of piled-up bricks. One author has suggested that each column represents the labor of one group of workers. Some adobe constructions have a series of overlying facing walls. A cut in one of these revealed eight superimposed walls, and certainly suggests different building periods. In fact, some of the interior facings had been coated with clay and painted. Actually, most exterior walls of adobe buildings were covered with a clay plaster which was either painted, or carved into relief, arabesque designs (pl. 14, *bottom*).

The corners of all buildings were carefully made. In the stone buildings, the corners might be made of dressed and fitted stones, although the rest of the wall was of rough stone. The corners of adobe buildings were often reinforced with cross poles. Special attention was also paid to the construction of niches, windows, and doorways. The lintels were commonly single-dressed slabs, or hewn wooden beams. The niches and doorways in the *Inca* buildings were trapezoidal in shape, namely, narrower at the top than at the bottom, and served to reinforce the walls (pl. 15, *left*). In some adobe buildings, the lintels for the niches and doorways were composed of three poles, cord wrapped, and coated with clay. The niches of the house sites at Chiripa had lintels made of unreinforced adobe blocks.

In buildings of any height, the walls were usually battered. This was also true of the higher terrace facing walls and gave them better strength of retention. Many of the higher walls had set-backs, like broad steps, which often gave an over-all effect of a stepped pyramid. In others, the structural steps were so narrow that they conveyed only an ornamental effect. In many of the adobe buildings, the bricks were laid in "English bond," i. e., alternate rows of headers and stretchers, which increased the solidity of the construction. Algarrobo logs were also used as binders in some of the higher adobe pyramids. They were laid close together at right angles to the face of the wall. In stone buildings, long slabs were sometimes used in the same fashion.

In the adobe masonry, the bricks were laid in courses, although usually irregular. In any case, extensive vertical joints were always avoided, both in adobe and stone walls. There was no coursing in the polygonal *Inca* stone walls; rather, the strength of the wall depended on the irregularity of the joints, the careful fitting, and the weight of the stones. The *Inca* masons who used the unit-sized dressed slabs and blocks attempted to achieve a coursed ashlar technique (pl. 15, *right*), but even here the lines usually wavered or broke. At Chavín, the facing walls which alternated rows of thick and thin slabs, never achieved true coursing. However, although the principle of coursed masonry was never mastered, the fact that the walls of adobe and stone have stood for centuries in a country noted for earthquakes is mute testimony to the solidity of their construction.

The use of joints for careful stone fitting is characteristic of both *Inca* and Tiahuanaco architecture. The *Inca* mason cut out a projecting ledge from one block which interlocked with a corresponding ledge on the adjacent block, or a projecting tenon was fitted into a sunken joint of another stone. As previously mentioned, most of this type of fitting was done in situ, but at Tiahuanaco, such joints seem to have been planned in advance. Many dressed stones have tenoned margins for fitting. Uprights in the facing walls have cut-out niches intended to receive and secure the adjacent smaller blocks. Many of the stones have square orifices into which a projecting squared tenon of another block will fit. The flat slabs for the temple floors have slight depressions cut out for the bases of the uprights. All of this suggests planning, even though the final fitting was done in situ.

The use of copper cramps for joining stones was a unique characteristic of Tiahuanaco masonry. T-shaped slots were cut out of the margins of two adjacent stones and specially cast copper cramps were fitted into them. Although such cramps would not support the weight of the blocks, they would prevent them from shifting position. Another jointing technique at Tiahuanaco consisted of drilling two holes in adjacent stones and cutting a groove between. Melted copper was then poured into the holes and the groove and allowed to solidify as a cramp.

Mortar or cement was not employed in the best stonework constructions, but in the adobe buildings, a crude sort of clay binding cement was used. In the earlier periods, the cobblelike adobes were set in cement, but the conical adobes were not. Instead, in building a wall of conical adobes, the first double row was laid point to point. The second row was laid on top of this, base to base. Thus the shape of the adobe itself was utilized to form double thick solid walls, with a flat, battered outer facing. In many of the *Inca* stone walls, the edges of the blocks were beveled. This seems to have been only an ornamental device, with no structural significance. Some of the *Inca* walls were curved, so that the dressed-stone blocks had to be cut to fit an arc. The lack of the principle of the true arch has already been mentioned. However, the *Inca*, and perhaps others in the Central Andes, employed the corbeled arch. Roofs of small houses were made in this manner, in which flat slabs are projected inward and weighted down at the back. The flat mountain stones were particularly adaptable.

## MANUFACTURES AND TECHNOLOGY

# BARK CLOTH

By ALFRED MÉTRAUX

The bark-cloth industry developed particularly among the tribes along the tributaries of the upper Amazon and among those of eastern Bolivia along the Guaporé, Mamoré, and Beni Rivers. Bark cloth was used to a greater extent among the tribes of eastern Bolivia than in any other part of America, but it is not necessary to attribute its popularity in this area to White influences, as Nordenskiöld does (1924 a, p. 209); the fact is, contact with White civilization failed to increase the use of this material elsewhere, even when the Indians had been provided with iron tools. The fact that the Indians of eastern Bolivia wore cushmas, copied after Andean models but made of bark cloth, is sufficient reason for the importance of the industry there. It is only indirectly, by encouraging the more general use of tunics, that missionaries might have influenced somewhat the manufacture of bark cloth.

Nordenskiöld (1924 a, pp. 208–210) has drawn up a list of the tribes who make bark cloth and also has prepared a map showing the distribution of the wooden mallets used in that industry. Actually, bark cloth and wooden mallets cannot be separated, even though a few tribes use stone rather than wooden instruments.

Bark cloth was put to various uses. It was made into tunics or cushmas (*Yuracare*, *Mosetene*, *Chimane*, *Guarayú*, *Atsahuaca*, *Chamá*, *Chacobo*, *Mojo*, *Chapacura*, *Záparo*, *Chébero*, *Encabellado*, *Moré*, *Orahone*, and *Betoya*), aprons or breech-clouts (Indians of the Cauca Valley, *Tucuna*, *Warrau*, *Piaroa*, *Cubeo*), mosquito nets (*Yuracare* and *Mosetene*), dance masks (Indians of the Caiarí and Uaupés Rivers, *Witoto*, *Tucuna*), and covers (*Jívaro*, *Mosetene*, *and Witoto*).

The species of trees that provided the bast for these fabrics generally are not indicated, but they seem to belong to the genus *Ficus*. We know that the *Witoto* made their cloth out of the *Fiscus redula*.

The technique used in making bark cloth has been described for only a few tribes. The *Mosetene* make their bark cloth from the thick bast layer of the bibosi (*Ficus* sp.) tree and of some other trees not identified. They cut a limb 8 to 10 inches in diameter and of the desired length, incise the bark longitudinally with a quartz splinter or a sharp tooth, and then heat the limb until the dry bark can be removed with a single jerk. The bark is stretched to separate the outer bark with its green layer from the inner bast, from which all the whitish fibers have been scratched. The bast then is beaten with a grooved wooden mallet until it becomes soft. Several pieces of bark cloth are sewn together to make blankets, shirts, and mosquito nets.

The ancient *Mojo* detached from bibosi trees large pieces of bark, sometimes 12 feet long and 3 feet wide, which they laid over a log and beat with a grooved wooden mallet. Afterward they washed the cloth, wrung it out to remove the sap, and dried it in the sun.

The *Moré* select the bark of various trees in order to obtain different colors for their bark cloth. The bark is removed so that the inner bast appears; this is beaten with the grooved edge of a flat wooden mallet and is separated from the lower layers and is cut to the required length. The bast then is pounded with the same mallet over a smooth log. After the bast strips have been washed and wrung out several times, they are dried and later are tailored (Snethlage, 1937, pp. 55–56).

The technique used by the *Carajá* is somewhat more primitive. They use bark cloth only for women's fringed aprons. The material is obtained from a gameleira (*Ficus* sp.) or from some other tree which gives them a reddish or white bark. They cut a limb, generally from 1.50 to 2 m. long, beat the bark with a stone, cut it lengthwise, and pull it off. The pieces of bark are then moistened, folded, and laid on a round wooden mortar where they are beaten with a stone, usually an old stone ax (Krause, 1911, p. 287).

The *Cubeo* use white bark cloth for their dance masks but prefer a reddish kind for their pouches, breechclouts, and aprons. They remove the bark from the tree by chopping the thin trunk into suitable lengths and then by pounding until the bark loosens sufficiently to be slipped off. After that, they pound the cloth until it is properly stretched. (See Handbook, vol. 3, p. 779.)

*Bororo* women also make a kind of bark cloth. They make their breechclout of a strip of tiliacea (*Apeiba cimbalaria*), which they chew to give it greater flexibility (Colbacchini and Albisetti, 1942, p. 60). In most tribes the strips of bark cloth are sewn together to make large pieces for shirts or covers. The *Moré* use needles made of *Astrocaryum* or of bone splinters.

In many tribes (*Yuracare, Mojo, and Moré*) bark-cloth fabrics are decorated with painted ornaments applied by means of wooden stamps. The most elaborate and beautiful ones are those that decorate the *Yuracare* tunics. The *Moré* enliven their tunics and coats by glueing different colored bark-cloth strips onto the whitish or dark background pieces.

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# BASKETRY

By Lila M. O'Neale

## BASKETRY FIBERS

The most available and obviously the most adaptable of South American basketry materials come from various palms. Many objects can be plaited from fresh leaves, but for finer work palm splints are prepared.

**Palm leaves.**—Among coarser objects are floor mats braided from long slender leaves of burití palm (*Carajá*), sleeping mats made of spathes of palms (*Yuracare*), thick mats made of palm stems to serve as rafts (*Paressí*), and interlaced palm leaves set as weirs across streams (*Guarayú*). The most widespread of baskets made of fresh-cut palm leaves are the temporary carrying baskets of various forms. Temporary hammocks are made in a few minutes by interlacing the tips of the burití leaflets (*Bacaïri*). Rough fire fans are constructed of a green leaf by plaiting its elements to the desired shape (*Mojo* and others). Most of the fire fans, however, are woven of ribbons split from palm leaflets (*Bacaïri* and others). Some of the most striking patterns in twill technique are found in the palm-splint fans of tribes in the northwest Amazon area, upper Xingú region, eastern Bolivia, and Mato Grosso. The patterning depends largely upon the uniform size of prepared materials.

The fan-leaf palm used in some areas (*Cayapa*) has its petiole stripped from it. This can be made to yield ribbons from one-eighth to one-half inch in width by from 3 to 12 feet in length. Strands from the pimpler palms (*Astrocaryum tucuma*) are septa pulled away singly and split. Prepared material of these types shrinks considerably and basket makers work with it in the morning while the air is still damp. Manioc squeezers, sieves, and trays are plaited of splints stripped from the midrib of long leaves of the cokerite palm (*Maximiliana regia*), or of splints from other palms (Guiana Indians, Northwest Amazon tribes). Other basketry types made of palm-fiber splints are baskets for supplies and storage (*Chiquito*, *Southern Cayapó*, *Sirionó*, tribes of eastern Brazil), funnel-shaped fish traps (*Wapishana*, etc.), mats for "blankets" over finer grass "sheets" (*Canella*), and the fine mats patterned in twill technique (*Mosetene*, *Guató*, *Yaruro*, *Apinayé*, *Southern Cayapó*). Palm-leaf splints make the sails on the craft manned by the Guiana Indians, *Arawak*, and *Carib*.

Palm fiber of finest quality is required by the *Cayapa* for trinket baskets. This is stripped from the under side of the palm leaf blade and is often dyed. The *Yaruro* make hunters' pouches from narrow strips into which the cortex of the palm has been divided. The *Tapirapé* make both their flexible and rigid forms of burití fiber. Telescoping palm-leaf baskets are made either by sewing even-width strips of palm leaves or by folding them to make "plaited" boxes (Roth, W. E., 1924, pp. 303–305, pl. 84, *B*, *C*). Both types are in use on the Caiarí-Uaupés and Aiarí Rivers for storing feathers, beads, and other small possessions (Koch-Grünberg, 1909–10, vol. 1, figs. 75, 174). (Pl. 18.) Similar forms are made by the *Macushí*, *Wapishana*, *Warrau*, and others.

Palm "straw" is prepared for *Motilones* and *Quechua* hats and for feathered crows of the *Yamamadí* and *Botocudo*. That which comes from trees (*Carludovica palmata*) growing at 5,000 feet elevation is considered best quality by Patuso hat makers of Colombia. The bushy palm growing in Jamaica furnishes excellent straw for hat making. Just before the spathe expands, it is cut off, and the narrow outer blades are divided lengthwise into ribbons of widths depending upon the quality of the hats to be woven. After boiling in water and drying in the sun, the strips become round compact straws.

**Leaf and grass fibers.**—Grass has limited uses among basket and mat makers. That growing on table lands in *Quechua* and *Aymara* territory and on the banks of Rio Chaparé is used for hats. The *Carajá* make a kind of netted cap of grass; the *Mojo* use arrow grass (*Gynerium sagittatum*) for some baskets. A few mats are fine enough in texture to require grass in their making (*Motilones*, *Mosetene*, *Canella*). The *Mosetene* plait arrow grass; the *Canella* make bed "sheets" of either babarsie or anaja and use them with their burití palm "blankets."

In coiled basketry, grass is used by the *Aymara*, who sew a spiralling bundle to the splint foundation with a fine grass braid. Its most noteworthy use is among southern tribes. The Fuegian or half-hitch coil is done over three or four stems of grass placed together as the foundation element. The same coarse native grass is employed for all coiled work of the region. Each round stem is flattened and made more pliable by chewing it. Braided grass or thongs make handles on Fuegian baskets.

Peruvian natives of the puna and those near Piura weave Panamá hats of paja toquilla straw; for second-quality hats they use paja or macora, which grows wild. Both must be collected at the right stage of growth and when weather and temperature are favorable. It may take months to collect material for a choice hat.

Leaves, other than palm leaves, are less common basketry materials. The *Carib* of the West Indies plait baskets from latania leaves split into ribbons and scraped clean with mussel shells; the *Taino* wove some baskets from biheo leaves and maguey fiber. Eastern Peruvian tribes make leaf pockets for small possessions and hang them up in the rafters. Nordenskiöld (1924 a, 3:203) lists tribes representing a wide area all of whom make a telescoping basket with smooth top and sides of *Gynerium* leaves (ibid., fig. 48).

**Rushes and reeds.**—The rush (totora) is valuable to the *Aymara* and *Quechua*, who live in the regions of Lake Titicaca and the Coast. It grows from 6 to 8 feet high, and is used for walls, roofs, mattresses, balsas, and sails. The *Lengua*, *Chamacoco*, and other Chaco tribes make huts of rush mats; other Chaco Indians occasionally plait sleeping or sitting mats. The *Mojo* lash together bundles of reeds for rafts.

W. E. Roth (1924, pp. 137–139) describes the process of preparing and splitting the canelike stem (itiriti, a species of *Ischnosiphon*) used by Guiana Indians. Stems of this reed are about 10 feet long; the diameter yields 8 or 12 strands. Baskets of diverse uses, such as manioc squeezers, sifters, and crab carrying baskets, are made of itiriti. When the material is split very fine, the basket walls appear like cloth. Smaller basketry objects are woven of split stems (*Carajá*); fine reed baskets are twined with cotton thread (*Mojo*); small reeds are held together by twining elements to form a straining mat (*Huanyam*, *Bauré*). A thin bundle of rush or straw is the foundation material in *Páez* and *Moguex* hats. Some of the crudely woven *Yahgan* baskets for taking fish are made with reeds; so are some of the fine coiled baskets of the *Yahgan* and *Ona* which have reeds for the foundation. Dobrizhoffer (1822, 1:414) mentions reeds fully 10 yards long which entwine in trees in *Abipón* country. Some of the finest reedwork is in the narrow feather-decorated fillets worn by *Cayapó* maidens, and the *Arawak* men's telescoping trinket or shoulder baskets of split reed (maranta).

**Cane and bark.**—The slender, flexible, woody stem of bamboo and rattan has special qualities to recommend it: form, body, usually a surface gloss, and ability to take dyes well. Most distinctive cane basketry shows geometric designs in contrasting dark and light elements; the outer green skin left on bamboo gives surface pattern. Cane-woven objects have varied uses: manioc squeezers are made of rattan (Purús River Indians); flat sieves of bamboo strips (*Tupí-Cawahíb*); and beeswax-lined containers for liquids and burden baskets of bamboo splints (*Caingang*). Also of bamboo strips or cane are double-walled baskets of the hinged-cover type, which the *Jívaro* pattern with geometric motifs; long baskets for holding communal treasures (*Tucano*); and cylindrical baskets with open, hexagonal weaves (*Nambicuara*). The effective cover basketry on *Carajá* and *Cayapó* weapons is black and white cane work. The *Páez* and *Moguex*, *Chocó*, *Cuna*, and *Tule* also twill with cane strips.

Manioc squeezers of the *Bora* are made of palm-bark splints, cut into narrow strips. *Cashinawa* women make trinket baskets of embauba bark. Small and large baskets of rough splints are made in open weaves by the *Talamanca;* the *Araucanian* baskets are woven of the inner bark of certain trees, especially the nyocha (*Greigia landbechii*).

**Roots, vines, withes.**—Vines and "aerial roots" of the sort which hang from trees are extremely useful for basket materials and for twines and ropes. The *Cayapa* obtain aerial roots by pulling on them. Usually they come free at their base and measure from 75 to 100 feet in length. Baskets which must be durable and stand strain, as well as some finer *Cayapa* baskets, are woven of the roots. In some baskets (*Cuna*) the warp element consists of the whole root; in others, the material is split into long thin ribbons, made uniform in size and smoothed.

Pliant stems of creepers come in many sizes and lengths. "Bush rope" (a *Carludovica*) is one of the materials plaited by the *Carib* and *Arawak* for sturdy packbaskets. Vine fibers are also used by Purús River Indians for strong containers. The *Carajá* weave mats of climbing vines (sipos). The hollow cylinder belts (*Patamona*, *Macushí*) are of vine fibers.

The *Jacaré* make carrying baskets of willow shoots, the *Mosquito* and *Sumo* plait withes, and the *Yahgan* make crude dip nets of split twigs. Probably many other tribes employ these rougher materials for durable baskets. Indians on the Orinoco and Rio Negro make cone-shaped fish creels of long flexible ozier twigs.

## BASKETRY TECHNIQUES

**Wicker and checker.**—These two basketry weaves are the simplest forms of two-element interlacing. Wicker weave is accomplished by carrying each active element (the weft) over and under each successive passive element (the warp), a procedure frequently referred to by the formula "over-one under-one." Neither the term "wicker" nor the principle of interlacing changes when for any reason the warp consists of two or more smaller elements which are never separated (illustrations: Roth, W. E., 1924, pl. 104, *A–C;* this vol., pl. 22). In checkerwork single elements are often broader than in wicker (Koch-Grünberg, 1909–10, vol. 2, fig. 148), or a unit of two or more active elements passes over and under units consisting of an equal number of passive elements. The appearance of the weaving is similar to that of a checkerboard whether the emphasis be on the vertical-horizontal or on the diagonal as in much of the mat work.

The list of tribes producing basketry by either wicker or checker or both weaving forms is a long one (Métraux, 1930, map 1). The following are representative: Many Central American districts; the Isthmus of Panamá; the Caribbean Islands; *Cayapa* (who use no other techniques for tightly woven burden baskets, bottle-shaped bait baskets, globular carrying baskets, etc.); *Aymara* (wicker trays); *Araucanians*; Indians of Jamaica; hat makers of Colombia, Ecuador, Northern and Southern Perú; Guiana tribes: *Carib* and *Arawak* (manioc squeezers, cone-shaped fish traps—woven with spiraling weft by the *Wapishana*—knapsacks, foundations for feather headdresses), *Tucano* (baskets for suspension); upper Xingú River tribes (*Bacaïri* knapsacks); eastern Bolivia (Nordenskiöld, 1924 a, 3: 198) includes the *Yamiaca* and *Atsahuaca* (wickerwork), *Yuracare* (ibid., fig. 30; see fig. 13), *Guató* (baskets, mats, and fire fans in checker weave), *Mojo*, *Churapa* (Panamá hats), *Mojo*, *Huanyam*, *Guarayo* (traps of wickerwork with spiraling weft), and *Chiriquano* (common forms of basketry); *Bororo* (palm-leaf baskets in checker weave); Chaco (many types of basketry); and *Abipón* (baskets in which babies are carried).

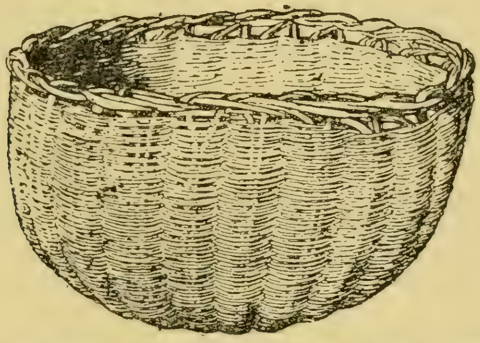


FIGURE 13.—*Yuracare* basket strainer. (¼ actual size.) (After Nordenskiöld, 1924 a, fig. 30.)

**Twills.**—Twills are recognized by lines of short or long steps diagonally crossing the surface of a fabric. Each step is formed by passing the weft over at least two warps; diagonals are formed by the regular progression of the weft element one to the right (or left) on each successive movement around the basket or across the mat. (Cf. Koch-Grünberg, 1909–10, vol. 2, fig. 142; this vol., pl. 18.) Stiff materials, such as cane, produce effective twills, and basket makers rely upon the combination of texture and technique for striking patterns.

Twilling is very old; it appears in the Peruvian workbaskets with lids so frequently found in women's graves on the Coast. There is also evidence of both coiled and twilled basketry in the markings on pots found in *Diaguita* territory.

Twilling is widely distributed; in some districts it is a dominant technique. The *Cayapa* and others usually weave the "even" twills, the two-and-two and three-and-three twills. In these the weft steps or overfloats across two or three warps and under the same number. Noteworthy *Cayapa* examples are their telescoping baskets, mats, and fans (Barrett, 1925, p. 198 et seq.). The *Páez* and *Moguex* make a few twilled baskets; but among Guiana and northeastern Amazon tribes, where varieties of weaves and techniques are familiar, the even twills are dominant (Roth, W. E., 1924, pp. 310–370). Twilled basketry from the northwest Amazon area is similar; among *Witotoan* tribes twills predominate. Even twilling is specifically mentioned for the *Yaruro* and *Boro*. *Ge* tribes weave twilled trinket baskets; the *Canella* make twilled mats. The *Northern Cayapó* make twilled arm bands, cover-basketry for weapon handles, carrying baskets, and sleeping mats. Chaco basketry is primarily twilled and wickerwoven. Other occurrences of twilling are the southeastern Panamanian tribes, *Motilones*, *Bacaïri*, *Paressí*, *Itonama*, *Guató*, *Chiriguano*, *Guaraní*, *Bororo*, *Tapirapé*, *Carajá*, and *Cainguá* (Outes and Bruch, 1910, fig. 78). (Pl. 19.)

*Basketry decoration.*—All tribes do not decorate basketry. The *Pamore* weave plain mats, and *Chiriguano* and *Chané* seldom ornament theirs. The *Cayapa* weave undecorated, simply decorated, and intricately patterned basketry. A larger number of tribes show considerable interest in patterns, and these, whether used as free-standing units or in continuous borders, are usually developed out of the twill weaves. (Cf. Schmidt, M., 1905, figs. 160–172.) Palm materials make twilling with clearly defined patterns. Panamá and Guiana Indians, those of the western Amazon (especially the *Jívaro*), and the *Carajá* and *Cayapó* make the most of twill techniques. The work of these peoples shows an interest in variety, for, although twilling is a simple technique, it does present difficulties whenever modifications of length, order, or direction of the overfloats are attempted. Intricate designs are evidences of manipulative skills and recognition of possibilities. The *Yaruro* consciously vary their baskets by changing the weave type. This is also characteristic procedure among primitive cloth weavers.

Design motifs are strongly geometric in woven basketry; there is no evidence that curvilinear motifs were regularly attempted through employment of very narrow weaving materials. A list of plants, insects, and animals represented on the side panels of telescoping baskets is presented by W. E. Roth (1924, p. 354) and *Waiwai* designs by Farabee (1924, figs. 7, 8). Few names appear to be given to basketry motifs, but almost all are based on steps, diamonds, zigzags, triangles, and hollow squares.

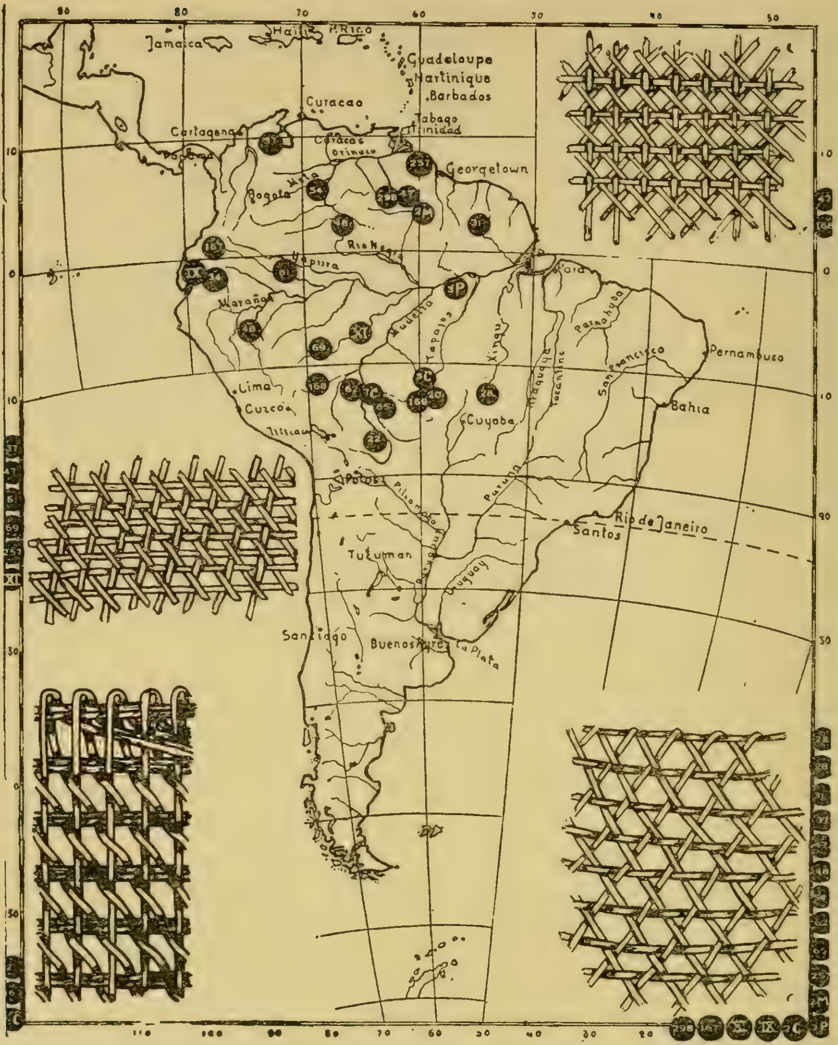
Combinations of surface and structural decorations are conspicuous for their rarity: the *Tapirapé* smear the finished basket with black genipa, and design motifs of negative-pattern type are developed by scraping away the color; the *Canella* paint simple geometric designs in yellow on their twilled baskets. Covered baskets made by the *Waiwai* and in use among the *Wapishana* have long cotton strings tied in knots for a decorative effect; feathers are in favor among these and other Guiana tribes. The *Huarpe* decorate sections of their twined baskets with tufts of rose, violet, red, and green wool yarns incorporated during the weaving (Métraux, 1929, pls. 1, 3). (Pl. 17.) Rings and crosses are the motifs.

**Twining.**—Twined basketry of the simple two-strand type has one set of rigid warp elements and the weft elements working in pairs. The warps are wrapped by twisting the weft strands a half turn on each other between each two single warps or groups of warps (Mason, O. T., 1904, pp. 231 ff.).

Twining (pl. 17) is a weakly developed technique in South America although a few items are reported from widely separated areas: among *Carajá* twining and twilling are dominant techniques. Close twining has an old history among the *Huarpe*, whose baskets were famous in the 17th century; even today the *Huarpe* make a covered bowl-shaped workbasket with a thick coil at the top *Cayuvava* twined baskets show certain adaptations of the technique; Nordenskiöld (1924 a, vol. 3, fig. 53) illustrates skillful handling of weaving elements at the start of the basket. The *Mojo* lidded reed baskets have twining elements of cotton threads.

Spaced twining is adapted to several uses: it is the technique in mats for straining manioc flour (*Huanyam*, *Bauré*, *Bacaïri*, *Carajá*); for small honey strainers (*Chorotí*, *Ashluslay*); for funnel-shaped fish traps (*Wapishana*); and for carrying baskets (Northwest Amazon tribes). Small mats of "roll-up" type are made by the Guiana Indians; large mats suitable for roof and wall covers are constructed of rushes held together with twining wefts (*Mbayá*, *Pilagá*, *Toba*). One of the most unusual forms of mat work, the *Aymara* sail, is also twined.

**Open weaves.**—Techniques used for many carrying baskets and knapsacks in order to keep them light in weight are called lattice-type, hexagonal weave (Koch-Grünberg, 1909–10, vol. 1, fig. 144), open weave (Schmidt, M., 1913–14, fig. 73; this vol., pl. 20), and three-element work. The characteristic feature of the hexagonal weave is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Meta
Rio Negro
Yapura
Marañon
Madeira
Tapajos
Xingu
Para
Parnahyba
Pernambuco
San Francisco
Araguaya
Tocantins
Bahia
Lima
Cuzco
Titicaca
Cuyoba
Potosi
Pilcomayo
Parana
Rio de Janeiro
Santos
Tucuman
Uruguay
Santiago
Buenos Aires
La Plata

Figure 14.—Distribution of lattice-type basketwork in South America. (After Nordenskiöld, 1924 a, map 27.)

the passage of weaving elements in three directions: horizontally, obliquely upward to right, and obliquely upward to left. Analysis of methods used by the *Cayapa* is given by Barrett (1925, pp. 207–216) and distribution of lattice-type basketry by Nordenskiöld (1924 a, vol. 3, map 27). (Fig. 14.)

**Coiled basketry.**—Basketry depending for its form on a coil of fibers sewn in place as it spirals from bottom to top is characteristic of tribes in the far south and on the west coast: the *Ona*, *Yahgan*, *Alacaluf*, and *Araucanians*. The technique is reported from the

*Chocó* and *Cuna*, but it is seldom used, and from the *Pancarurú*, *Apinayé*, and *Mataco*. The latter group may have acquired it from Mestizo neighbors. References are made also to the Surinam hat in half-hitch coil illustrated by De Goeje (1906, vol. 22, pl. 9, fig. 13). The *Quechua* and *Aymara* also make coiled baskets. Unlike standard methods, the *Aymara* form their bowl-shaped containers over a foundation made of a series of radiating splints to the interior surface of which the coils are sewn. Some coiled baskets have come from excavations on the Peruvian coast and in the *Atacameño* area.

The greatest development in coiling is among tribes of Tierra del Fuego and up the Chile coast. The sewing technique employed is the half-hitch done over a foundation, a type called Fuegian or half-hitch coil (Lothrop, 1928, figs. 59, 61, 65). Work is begun in the usual manner with foundation materials of grass stems shaped to form a small disk. At the turning point from bottom to side, the disk is suspended bottom up by a cord from a support. From this point on to the finishing coil, the weaver's two hands are free to sew and coil. The only essential tool is a small wooden or bone awl for piercing.

The *Yahgan* have four types of coiled work: the first two are based on half-hitches over a foundation, the third is a half-hitch without foundation, and the fourth is a wrapped or knotted half-hitch employed in constructing dip nets. Open-mesh, coiled baskets made by these people vary in size, shape, and use. Two baskets have round bottoms, one of them a bucket-shape, about 7 or 8 inches in diameter. Both kinds have handles of thong or plaited grasses. These are typical *Yahgan* baskets, and, as the *Southern Ona* names for theirs are similar to the *Yahgan* names, it is probable that the former were borrowers. An "ordinary large mesh basket" (Cooper, 1917, p. 189) attached to the end of a harpoon handle becomes a dip net.

## BASKETRY COLORS

Many ordinary baskets are woven in natural colors, but there are three general methods of bringing contrasting colors into the patterning: (1) By using elements whose colored surface and reverse sides differ. *Chocó*, *Tule*, and *Cayapa* weavers manipulated elements to produce mats or baskets with all light or all dark surfaces, or combination of dark and light. (2) By using elements of different natural color (*Paressí-Cabishí*, in Schmidt, M., 1913–14, figs. 67–69). Guiana and *Arawak* weavers choose contrasting warps and wefts; the *Caingang* leave the outer green skin on bamboo splints. By turning the individual elements, the basket exterior shows alternate bands of green and white. (3) By dyeing one series of weaving elements. Black is most often mentioned (*Chocó*, *Tule*, northwestern Amazonian tribes, *Wapishana*, Purús River Indians, upper Xingú tribes, *Southern Ge*, *Guaraní*). The *Wapishana* scrape and bleach some strips for stronger contrast with black-dyed elements.

Red dye is made from achiote by the *Cayapa* and the Rio Negro and Central American tribes. The *Cayapa* stain their hoja blanca with red by rubbing achiote, the coloring matter, on the stem. Colored strips are occasionally used for geometric designs in trinket baskets and fans.

Basket materials gathered in the fall by Fuegian tribes are red from the first frosts; the color fades in a few weeks. The *Chocó* employ cauto, the pigment of *Genipa americana*, for jet black dye; the *Northwestern Ge* make yellow paint for surface decorations.

### DIVISION OF LABOR

Some writers state specifically whether the men or the women of a tribe make household basketry and mats; other writers report that in certain tribes the craft belongs exclusively to neither sex. In the Guiana area both men and women make baskets, but some objects usually made by women in one district may be made by men in another (Roth, W. E., 1924, pp. 690–691). Also, craftsmen of both sexes may weave in the same tribe (southeastern Panamá tribes).

Among northwest Amazon tribes women are the chief basket makers, but men help and occasionally weave by themselves. (Cf. Koch-Grünberg, 1909–10, vol. 1, fig. 138, *a*, *b*). In Jamaica straw hats are the workmanship of women and girls, but when outdoor work fails or the weather is bad, men take a hand. Among northern and southern Peruvian tribes both men and women plait hats. Women are the chief or the only basket and mat makers among *Jívaro*, *Cayapa*, *Yaruro*, *Motilones*, *Huanyam*, *Bororo*, and *Yahgan*.

Nordenskiöld (1924 b, p. 245) asserts that in most Indian tribes basketry is plaited by men. More tribes in which basketry is a masculine craft are mentioned, but in some of them women weave small containers for personal belongings (*Macushí*, *Cashinawa*), or make provisional burden baskets (*Apinayé*), or baskets of special shapes, such as the *Sherente* oval basket (Nimuendajú, 1942, pl. 1, A). It may be assumed that wherever provisional burden baskets are constructed men know how to plait them from various palm leaves. Hat making and the making of basketry frames for feather headdresses appear to be predominantly in masculine hands among *Jívaro*, Rio Negro tribes, *Chiquito*, Rio Chapré tribes, and *Chané*. Basketry is specifically referred to as one of man's tasks for *Island Carib*, *Arawak*, *Carib*, *Acawai*, *Warrau*, *Wapishana*, *Tariana*, Rio Xingú-Madeira tribes, *Nambicuara*, *Guató*, *Chimane*, and *Northwestern* and *Central Ge*. Men excel as basket makers among British Guiana tribes; in some they always weave the cassava squeezers and fire fans. *Macushí* men make their own fine shoulder baskets for small possessions; *Caingang* men make waxlined containers for liquids as they are needed. Henry (1941, p. 170) writes that they meet in groups, laughing and comparing handwork, while they make large burden baskets just before going out to collect pine nuts.

### BASKETRY LACKING

Basket weaving is unknown or not practiced in some South American areas. The *Camakan* do not weave, nor do tribes on the upper Xingú or in the Chaco, except those marginal tribes (*Caduveo*) in contact with basket-making neighbors. Basketry is unknown to the *Tehuelche*, *Puelche*, and *Chono*. Some of these peoples live in regions lacking suitable fibers for basketry; some use netted objects in place of baskets. A few tribes plait only provisional palm-leaf baskets (*Sirionó*), or make headdresses requiring slight knowledge of techniques (*Botocudo*), or use basic manipulations only in traps and fishing gear.

Abundant basketry material from Peruvian sites is retrievable. Museum collections are small as yet, and no intensive studies have been made. Ancient basket makers appear to have been satisfied with expertly woven and sewn objects made for use. Most decoration consists of simple geometric units in one or two colors. Native styles and tastes were expressed not in basketry but in cloth through extraordinary combinations of techniques and colors.

There is no mention of *Chibcha* basketry; but the few mixed descendents of the ancient *Huarpe* still weave beautiful baskets, thus confirming historical references to their craftsmanship.

### HOUSEHOLD BASKETRY

**Carrying baskets.**—Baskets for packing in loads of fruits, heavy roots, and firewood, and for transporting utensils and household goods are in common use among many South American tribes. Some baskets are provisional contrivances (*Tupí-Cawahíb* rucksack) made by ingeniously knotting two green palm leaves together. As soon as the leaves become dry, the burden basket is worthless. Such rough containers may be strong enough for carrying large objects or an animal. *Cayapa* temporary baskets are pouch-shaped; northwest Amazon tribes find many uses for a deep square basket reinforced with two foundation rods. The whole thing is constructed in 5 minutes and discarded at the end of the trip. Sturdy baskets of this general type made by braiding together the leaflets of a single palm leaf are reported from northeast Amazon tribes and the *Bacaïri* (Schmidt, M. 1905, fig. 174), *Mojo*, *Chimane*, etc. (Pl. 20.) Nordenskiöld (1920, 2:169) lists the tribes who do and those who do not construct temporary pack baskets. The latter group include the *Chorotí*, *Ashluslay*, *Toba*, *Papiete*, *Mataco*, *Quechua*, and *Aymara*.

Most burden baskets are woven with concern for durability. Two main types are constructed: large bowl-shaped or cylindrical baskets with tumplines (Koch-Grünberg, 1909–10, vol. 1, fig. 24) and baskets with frames, the "knapsacks" (Roth, W. E., 1924, pl. 107). (Pls. 22, 23). The first type, widely distributed, is used by both sexes.

Shapes, sizes, materials, and construction techniques vary from one tribe to another. Some cylindrical baskets flare outward (*Cayapa*); some are straight-sided (*Jívaro*); West Indian *Carib* make large pyramidal shapes; one *Jacaré* form is square. Manioc carrying baskets of northwest Amazonian tribes measure approximately 20 inches each way. Characteristic features are the square bases, straight walls, circular rims, and checker or twined weaves. Many large baskets are loosely woven in checker or open hexagonal weave to lighten weight (*Arawak*, *Warrau*, *Tucano*, *Cashinawa*, *Omagua*, *Cocoma*, *Paressí*, *Mojo*, *Chapacurans*). *Coroado* carrying baskets are about 30 inches long, the depth also of the *Jívaro* basket. A narrow basket used by *Northern Cayapó* for transporting crops is only 10 inches high; they have also a bowl-shaped type with tumpline; *Araucanian* carrying baskets are similar (Latcham, 1909, pl. 35). Simple baskets for transporting goods are mentioned for the *Cuna*, *Witoto*, *Chiquito*, *Chimane*, *Aweicoma*, *Shokleng*, and *Carajá*. *Abipón* mothers carry babies in wicker baskets on their shoulders when they travel; the *Tule* make an oblong burden basket designed to carry a bar of prepared cacao.

Totally different in construction from all these is the coiled bucket-shaped carrying basket with plaited handle (fig. 15), which is standard equipment for the *Alacaluf* canoe (Mason, O. T., 1896, fig. 181).

No one term adequately describes the "knapsack" carrying baskets with wooden frames (Chervin, 1907–08, fig. 50; Roth, W. E., 1924, pl. 118). (Pl. 23.) Some are slipper-shaped. They are usually longer and more strongly built than the ordinary packing basket. The rectangular form is characterized by open top and outer side. Reinforcement consists of a frame of rods with the two side members projecting below the basketry to serve as legs. The contents of the loaded basket are kept in place by cords lacing across the open side. Mats and covers woven to size and shape give added protection. The knapsack is supported on the carrier's back by a tumpline. It is the principal carrying device in the Guiana area; and is also in use among upper Xingú tribes in British Honduras and Guatemala. The *Bacaïri* knapsack has a framework of wicker hoops, an elliptical one at the bottom, longer ones lashed together forming back and two sides. Each oval opening is filled in with interlacing bark strips. The distribution of knapsack types (fig.16) is plotted by Nordenskiöld (1924 a, vol. 3, map 21, p. 174).

Of undoubted post-Columbian origin are large pannier market baskets suspended across the backs of donkeys (Jamaica).

**Food-storage baskets.**—Every tribe must have storage containers for provisions. Guiana Indians make special baskets for farina. They are small truncated cones lined with leaves, according to accepted methods, in order to prevent flour from sifting through. More leaves covering the top are firmly held with interlaced splints. Openwork wicker baskets with rounded bottoms (Im Thurn, 1883, p. 280), frequently mounted on legs, are used in the same area for storing foodstuffs. Large containers in open hexagonal weave for lightness are much in evidence among northwest Amazon tribes. The *Nambicuara* make low square palm-leaf baskets for manioc and maize flours; the

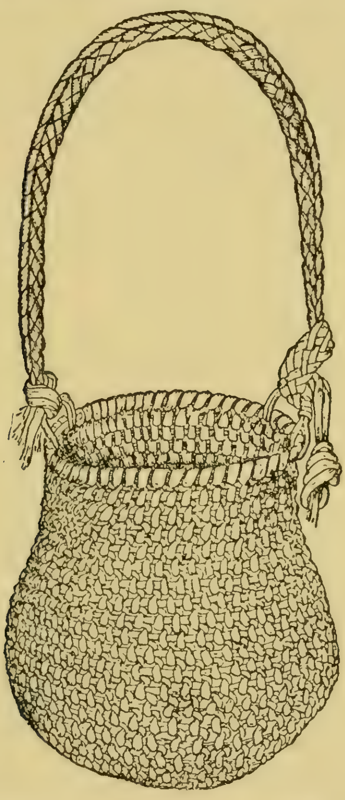
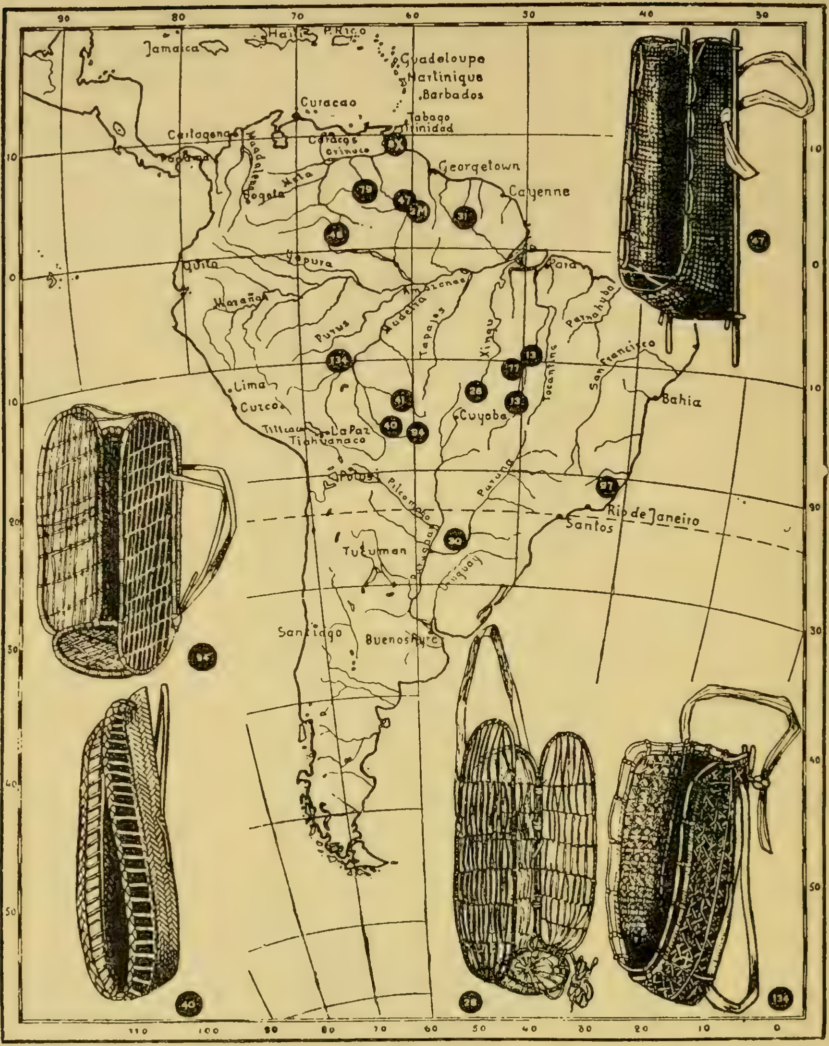


FIGURE 15.—Carrying basket from Straits of Magellan. Coiled in half-hitch or buttonhole stitch. (After Mason, O. T., 1896, fig. 181.)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Bogota
Georgetown
Cayenne
Quito
Japura
Marañon
Amazonas
Para
Parnahyba
Purus
Madeira
Tapajos
Xingu
Tocantins
San Francisco
Lima
Cuzco
Titicaca
La Paz
Tiahuanaco
Cuyoba
Bahia
Potosi
Pilcomayo
Parana
Rio de Janeiro
Santos
Tucuman
Paraguay
Uruguay
Santiago
Buenos Ayres

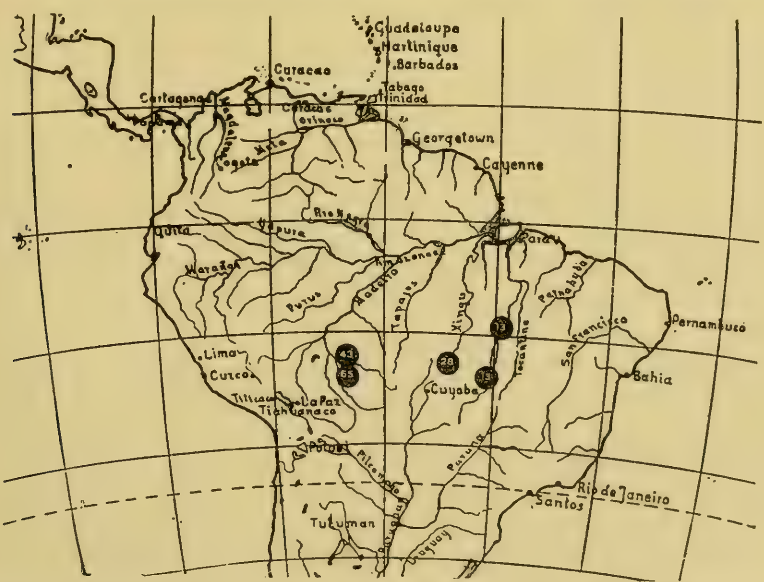
FIGURE 16.—Distribution of the carrying basket (*Guarayú* type in South America. (After Nordenskiöld, 1924 a, map 21.)

*Sirionó*, who weave only simple basket types, make palm-leaf containers for their harvests; and the *Carajá* make a square basket especially for tobacco. The *Tapirapé* storage baskets for manioc or corn flour have a squarish base and narrow round top. Storage baskets are frequently hung up under the eaves or from the house rafters: an ordinary cylindrical basket (*Cayapó*) has a woven handle for this purpose. Food utensils and calabashes are stored by *Mosquito* and *Sumo* in round withe baskets.

Several tribes make small watertight containers for liquids (*Aweicoma*, *Shokleng*, *Caingang*, *Guayakí*). The general method is to coat the weaving elements with wax or to apply a coat to the finished basket. *Caingang* workmanship is carefully done. Shapes are similar but sizes differ from receptacles holding a cup of water or honey to others holding a gallon.

*Alacaluf* rush storage baskets are coiled or sewn. (See Lothrop 1928, fig. 81.)

**Cassava squeezers and sieves.**—Manioc roots in being transformed to flour are peeled, grated, and squeezed to express the poisonous juice; the substance remaining is dried, pounded, and sifted. Most of the equipment is basketry. Cassava presses and sieves are essentials in the household equipment of some tribes from the upper Rio Negro across to the Guianas and south to the *Chiriguano* (Nordenskiöld, 1924 a, vol. 3, map 17). (Fig. 17.) All descriptions of presses are similar in basic details. The cylindrical form is closely twill-woven of fine splints; the tube measures from 5 to 8 feet by 5 to 7 inches in diameter (*Wapishana*, *Waiwai*, *Macushí*, etc.), to 7 to 10 feet by about 6 inches in diameter (*Bora*, etc.). The extended weaving at both ends of the tube forms loops. The top loop, so constructed as to leave an opening at one side, permits suspending the press from a support; the bottom loop, beyond the closed end, permits passage through it of a lever or bar. Application of pressure sometimes by one or two women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Purus
Para
Maranon
Amazonas
Madeira
Tapajos
Xingu
Tocantins
Parnahyba
San Francisco
Pernambuco
Bahia
Lima
Cuzco
Titicaca
La Paz
Tiahuanaco
Cuyaba
Potosi
Pilcomayo
Parana
Paraguay
Tucuman
Santos
Rio de Janeiro
41
65
28
13
13

Figure 17.—Distribution of sieves and strainers in mat form. (After Nordenskiöld, 1924 a, map 17.)

sitting on the bar, elongates the compactly filled cylinder, reduces its diameter and expresses the juice (Koch-Grünberg, 1909–10, vol. 2, fig. 123, *c*).

Among northwest Amazon tribes the cassava press is a long mat of plaited bark fiber about 10 inches wide, which is wound spirally around the mass of grated manioc and twisted (Whiffen, 1915, p. 99). (Pl. 18.) Uaupés River Indians spread grated manioc over a tray supported from a tripod and force out the juice by hand pressure. (Cf. Koch-Grünberg, 1909–10, vol. 1, fig. 25.) (Pl. 18.)

Sifters, in use among many tribes, remove hard particles from lumpy dry manioc meal. Forms are generally square with low rims raised by tying on small sticks. These extend beyond the corners and support the sieve on the woman's lap. She steadies the frame by bracing her out-stretched feet against the distal end. W. E. Roth (1924, pls. 71, 72) illustrates several Guiana sifters in wicker, twilling, and open weaves (pl. 23). Finely woven disks and square sieves are reported from tribes on the upper Xingú, *Bacaïri* and *Tupí-Cawahíb*. Nordenskiöld (1924 b, pl. 23, *a*) comments on not seeing much basketry among tribes of Eastern Boliva but speaks with admiration of the beautifully patterned *Chimane* sieves. The *Chiriguano*, *Chané*, etc., use round basketry sifters for corn. They are also reported for the *Mojo*, *Huanyam*, *Bauré*, *Paressí* (Schmidt, M., 1913–14, figs. 65, 66), *Chapacurans*, and *Guayakí*.

*Yuracare* strainers are bowl-shaped (Nordenskiöld, 1924 a, vol. 3, p. 129). The *Carib* have basket strainers for drinks; *Chorotí* and *Ashluslay* have special small strainers for honey.

**Tray types.**—Trays are shallow basketry forms with rims, and are frequently so closely woven that they can be used to hold cassava flour. Their many uses include holding bread, foodstuffs, or raw cotton in one of its preparatory stages. Hanging trays keep their contents out of reach of dogs or ants. The *Mosquito* and *Sumo* suspend over the fire the flat withe baskets to hold wooden spoons and stirring sticks. Guiana trays are rectangular, oval, or round, and frequently patterned with geometric motifs developing out of twilling techniques (Farabee, 1924, pl. 23, *a*). Edge finishes are varied. W. E. Roth (1924, p. 313 ff; see pl. 22) describes straight vertical rims built up by plaiting strands of foundation elements and other strengthened rims dependent upon the introduction of supporting rods. Occasionally, short legs are attached to the corners of a rectangular tray turned upside down to serve as a table (West Indies *Carib*). Forms interpreted as tray types are mentioned for the *Cuna*, northwest Amazon tribes, *Mojo*, and *Aymara*. The latter's shallow wicker trays may be of Spanish introduction.

**Special household baskets.**—Among special baskets connected with food getting, preparation, and serving are the following: Wicker stands for pots (Aiarí River tribes); woven rings for calabash stands (*Cayapa*); for water jars (Koch-Grünberg, 1909–10, vol. 1, figs. 14–15; this vol., pl. 18); bottle-necked baskets for farina flour, and hourglass-shaped containers (Guianas); small tubular baskets for storing chili peppers while drying (northwest Amazon tribes); bottle-shaped baskets (*Carajá*); receptacles for edible ants (*Resigero*); small waterproofed baskets to serve as cups, dishes (*Huarpe*, *Aweicoma*), and spoons (*Mojo*); and forms imitating pottery vessels (*Chiriguano*). A small *Cuna* basket described in the 17th century was said to have been woven so closely as not to require waterproofing. Scoop baskets and trays for handing food to guests are woven in the Guianas. W. E. Roth (1924, fig. 194, pl. 121) illustrates the method of manipulating palm leaves to form sturdy containers with reinforced edges (fig. 18; pl. 22).

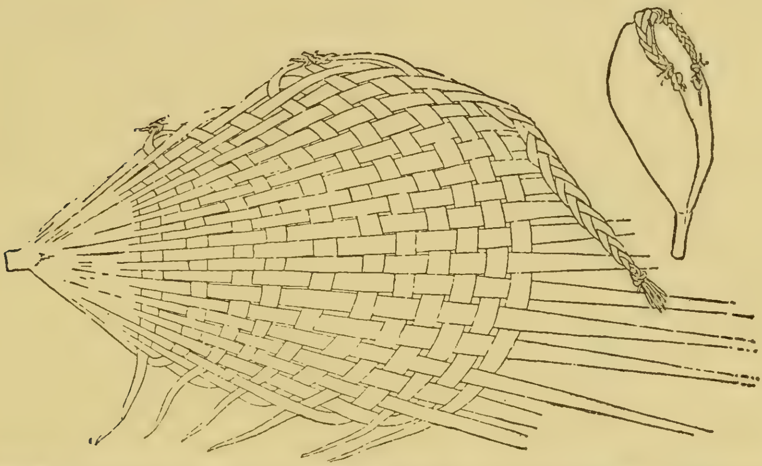

FIGURE 18.—Diagram of an ité-leaf scoop basket of the Guianas. (After Roth, W. E., 1924, fig. 194.)

**Fans.**—Basketry fans are woven by tribes from Ecuador to the Guianas and from Central America south to include some *Guaraní*. Occasionally, fans are used for personal comfort (*Cayapa*); however, W. E. Roth (1924, p. 291) mentions the *Arawak* belief that a woman would lose flesh were she to use one on herself; the greater number are used to fan fires. Besides this use, some Guiana tribes use the fan to smooth, level, and turn over the cassava cake on the griddle.

Shapes of fan blades vary, depending somewhat upon the form of materials but more upon techniques of construction. Square-blade fans with handles projecting from one corner are the only *Cayapa* type; they are found also on the lower Amazon and upper Xingú together with triangular fans. The rectangular blade is characteristic of Panamanian and *Carib* tribes and *Purí-Coroado;* the shovel-shaped fan is *Arawak*, and the heart-shaped fan is typical of tribes on the Caiarí-Uaupés River (Koch-Grünberg, 1909–10, vol. 1, fig. 126).

Almost the only fan materials are palm leaves, the fronds plaited, the midrib included (Schmidt, M., 1913–14, figs. 30, 63, 64); the *Bacaïri* make some grass fans. *Tupí-Cawahíb* often adorn their fans with feathers; usually decoration is structural as in other basketry, solely the result of technique.

## BASKETRY FISHING GEAR

Equipment especially constructed of basketry materials and by basketry techniques or modifications of ordinary household shapes, such as the sieve and tray, are used for catching fish. Sizes vary from fence-weirs across streams to small dip nets. Many tribes set conical wicker-woven creels in the weirs (Guiana Indians, *Guarayú*, *Huanyam*) or dams (*Guarayú*, *Pauserna*, *Chiquito*, *Mojo*). The Central *Arawak* (*Wapishana*, etc.,) weave funnel-shaped basketry traps from 6 to 8 feet long and about a foot across the mouth, also smaller traps consisting of one funnel inside another, and spring traps attached to poles.

The *Cayuvava* and other Indians (Nordenskiöld, 1924 a, vol. 3, p. 90) have a strongly made basket form resembling a lampshade, which is useful for catching fish in very shallow water or mud. The basket is thrown down over the fish, which are then taken out through the top opening. W. E. Roth (1924, pl. 49, *c*) shows a specimen from the upper Rio Negro. Large trays are also woven for the fisherman. The *Chiquito*, *Mojo*, and *Guarayú* among others, catch eels with baskets of ordinary shapes. *Guarayú* men hold a large oval basket at an angle to the stream bed; assistants beat the water with poles to frighten the eels toward the basket. The *Arawak* and *Guarayú* catch small fish on sievelike trays, by submerging the trays under the aqueous plants, then bringing them up suddenly.

Conical-shaped baskets are landing nets (*Carib*, *Arawak*), and larger baskets made for other uses may be attached to harpoon handles and used as landing nets. Basketry dip nets for taking small fish are also reported (*Yahgan*, *Ona*). Rushes, bark, and split twigs are worked into crude forms.

Live insect bait is kept in bottle-shaped baskets (*Cayapa*).

## BASKETRY OBJECTS FOR PERSONAL USE

**Covered and telescoping baskets.**—The classic example of a covered basket is the oblong twilled container with hinged lid commonly used in ancient Perú to hold a woman's weaving, spinning, sewing materials, and her small tools and spindles (Mason, O. T., 1904, pl. 243).

Double or telescope baskets consisting of two deep trays, one for body and one for cover, are woven in a variety of forms and sizes with notable success over a wide area (Nordenskiöld, 1920, vol. 2, map 14). (Fig. 19.) Some of the tribes on Nordenskiöld's map are the *Chiriguano*, *Guayana*, *Carajá*. More or less flexible hampers with overlapping lids may be furnished with handles (Jamaica). This favorite style comes in round or squarish forms and in different heights and degrees of sturdiness. The *Taino* and West Indian *Carib* make double-walled baskets and place a lining of leaves between the walls to insure against moisture. Telescoping envelopes are reported from the *Cuna*. *Cayapa* hampers are described in detail by Barrett (1925, pp. 202–207), who calls the form perhaps the most useful of all those made. As storage containers for clothing and valuables they may be drawn up to the rafters; used as traveling bags, they hold a man's mosquito canopy, clothing, face paint, extra finery, and jewelry. *Tule* baskets of this type are small pack baskets which are carried; they are much prized by the women. Characteristic features of telescoping baskets made in the Guianas are the close checker, twill, and wicker weaves and the striking geometrical patterns, especially those developed through manipulation of twilling techniques (Roth, W. E., 1924, figs. 167–184). (Figs. 20, 21.)

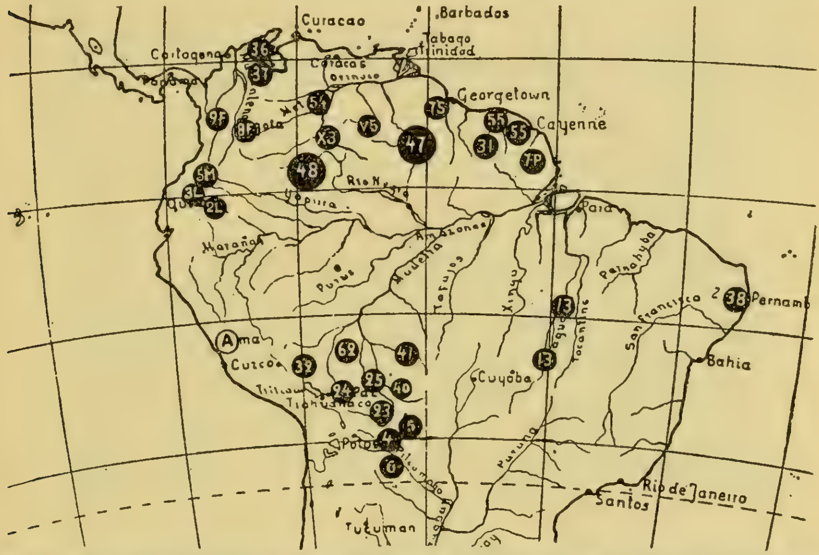

FIGURE 19.—Distribution of baskets with lids. The type on the Peruvian Coast had a lid which is opened like an ordinary modern cigar box. (After Nordenskiöld, 1920, map 14.)

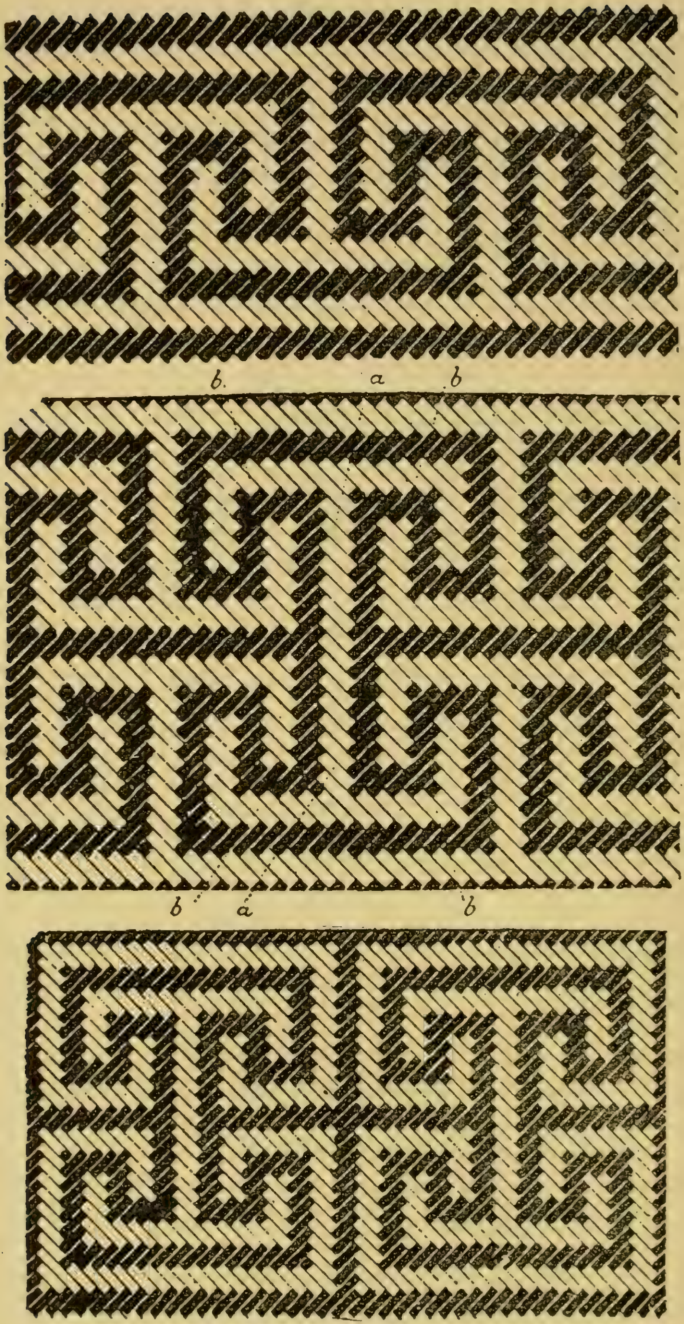

FIGURE 20.—Decorative basket weaves of the Guianas. Hourglass pegall side-panel patterns representing the wild nutmeg, indicated by its main (*a*) and secondary (*b*) branches. (After Roth, W. E., 1924, fig. 168.)

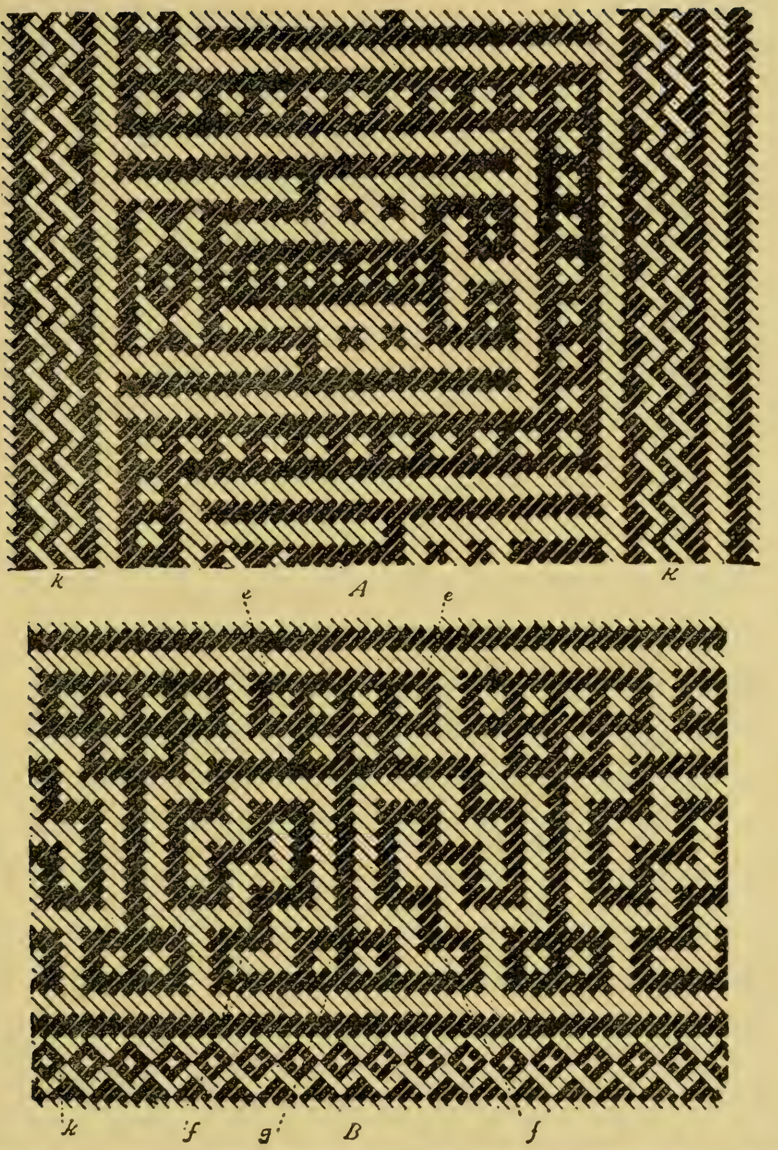

FIGURE 21.—Decorative basket weaves of the Guianas. Hourglass pegall side-panel patterns. *a*, Main; *b*, dog. (After Roth, W. E., 1924, fig. 178.)

The *Jívaro* make very strong baskets of split rattans. Body and cover are each composed of two separately woven baskets rendered rainproof by interlining the space between them with tough palm leaves. Each pair of baskets is then sewn together around the upper edges, and the cover basket is hinged to the container proper. Anything and everything may be packed in this type.

**Containers for small belongings and trinkets.**—Among baskets woven for special purposes are those in which raw cotton in various stages of preparation is stored (Farabee, 1918, pl. 27, *c–f*) and in which spindles, balls of yarn, and sewing supplies are kept. Workbaskets are woven by the *Piro*, by tribes in the Guianas, and on the Amazon. The *Piro* and *Waiwai* make several baskets connected with cotton preparation. One form holds unginned raw stock. The rough framework is thickly lined with palm leaves; near the top is left a hole just large enough for the hand. Such baskets are hung near the roof to keep their contents dry. Ginned cotton is stored in small bowl-shaped baskets; spindles and yarn are kept in larger circular or square baskets. The *Huarpe* make beautiful workbaskets decorated with woolen tufts dyed different colors. The *Cayapa* store spindles in long tubular baskets, and the *Carajá* weave boat-shaped baskets of beautiful workmanship; both types are made to be suspended. Among the most distinctive containers are those in which *Bauré* and *Mojo* women store spindles. The shape is roughly like a wooden shoe with a cord handle across the instep by which to hang it up. Some (Nordenskiöld, 1924 a, vol. 3, fig. 51) are twill-woven in an all-over block pattern (fig. 22).

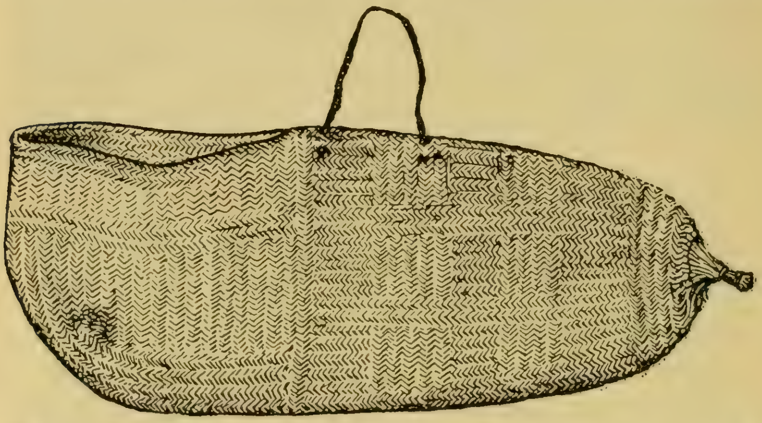

FIGURE 22.—*Bauré* basket. Used by women to keep spindles in (⅛ actual size). (After Nordenskiöld, 1924 a, fig. 51.)

Men and women of certain districts make or may even procure, from other tribes, baskets for personal belongings. Trinkets are carried by *Wapishana* and *Waiwai* women in long pocket-shaped open baskets with narrow mouths. *Cashinawa* women weave small receptacles of bark strips; the *Northwestern Ge* make specially constructed twill-woven receptacles. There is some question as to the aboriginality of splint-ware trinket baskets made by the *Aymara*.

The finest craftsmanship in some tribes appears to have been expended upon trinket baskets worn by men. A *Jívaro* man carries small possessions in a rectangular bag with a flap cover, suspended by a shoulder strap; the *Carajá* weave beautiful hand and shoulder bags, many of them flexible. Baskets carried by men in some parts of the Guianas (Farabee, 1918, pl. 26) are generally square or rectangular forms of the so-called telescope variety; they are distinguished from other forms by a lid which fits down over the top of the basket proper. Guiana weavers make each part of shoulder bags double with a moisture-proof interlining of leaves. The West Indian *Carib* attach their small rectangular trinket baskets by cords to canoe gunwales in case the craft should overturn. The *Waiwai*, experts in making telescope baskets, pass the suspension cord underneath the basket base and thread it through the sides of the lid so that the lid may be moved up and down freely. *Waiwai* weavers often develop elaborate geometric patterns in twill techniques, using dark and light strands of material for emphasis (Farabee, 1924, pl. 34). Guiana trinket baskets may be decorated with loose strings of thick white cotton, knots, and tufts of colored feathers.

Storing of feathers used in decorative work and ornament making and feather-decorated objects is a special concern among some tribes. *Jívaro* and *Carajá* men have baskets for larger pieces of finery; these they hang up on houseposts or suspend from the ridge pole. For feather ornaments the *Carajá* also make long telescope-type containers, and the *Guayakí* plait flexible pouches. Nordenskiöld (1924 a, vol. 3, fig. 52) pictures the conical basket specially constructed for feathers by *Guarayú* (*Chama*). (Fig. 23.) Long cane splints held together with spaced twining elements make a foundation which is always covered with bark cloth. The *Tucano* weave an oblong wicker storage basket which they suspend in the community house. Communal treasures and regalia for great feasts, bracelets, necklaces, bone girdles, and feather ornaments are placed in this basket, which can be drawn up to the roof.

"Cover basketry" is the term employed (Roth, W. E., 1924, p. 372) to denote plaitwork built around certain objects. Under this classification come emptied calabashes used as floats for baited fishing lines (*Warrau*), large jars covered with open basketry (ibid., pl. 21; Koch-Grünberg, 1909–10, vol. 1, fig. 26; see pl. 22), the central two-part "bars" between which palm splinters are clamped to form combs (Uaupés River, Rio Negro, and Guiana tribes; see Whiffen, 1915, pl. 14; Krause, 1911, pl. 21, *1*), blowpipes and clubs (*Macushí*, *Arecuna*, etc.), spear shafts beautifully decorated with black and white canework (*Carajá*), bows covered with basketry sheaths (*Tupinamba*), and handles of clubs. (See Nimuendajú, 1939, fig. 28, for the *Apinayé*.)

**Hats, headdresses, and accessories.**—Nordenskiöld (1930 a, 8:79) asserts that hats are first and foremost ornamental, and are known only

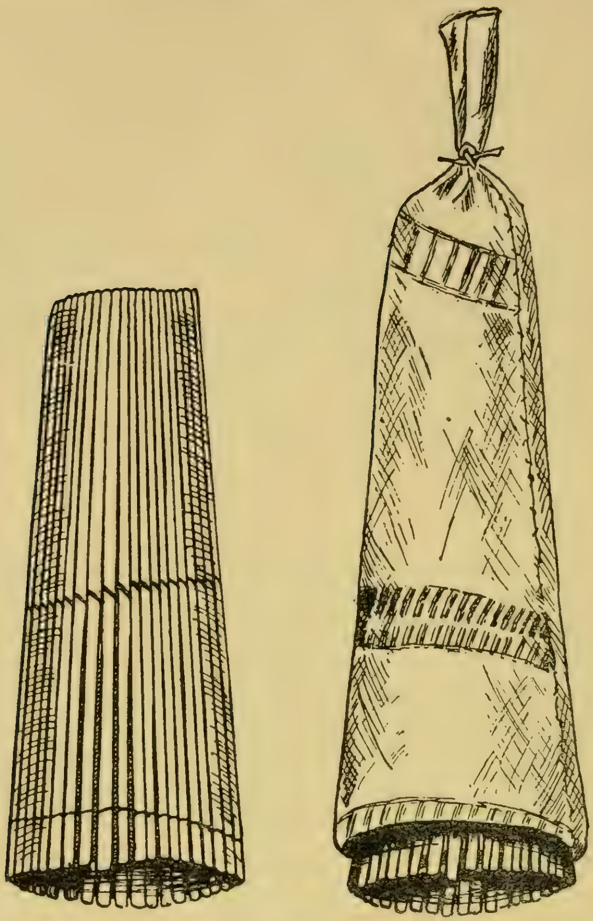

FIGURE 23.—*Chama* conical basket. Used to keep feathers in (1/7 actual size). (After Nordenskiöld, 1924 a, fig. 52.)

among those tribes influenced to some degree by contacts with White civilization. Plaited eyeshades are worn by the *Carajá* (Krause, 1911, figs. 33, 34; see fig. 24) and also openwork hats. "Panamá" type straws made by the *Mojo* and *Churapa* after methods presumably learned from the Spaniards, feather-banded straw hats with conical crowns plaited by the *Motilones*, straw hats of the *Cainguá* (Outes and Bruch, 1910, fig. 79; see pl. 19), and hats of the *Bogotá* appear to be imitations in form and construction. Other forms are the peaked palm-leaf hats (*Warrau*), and hats of grass straw woven after the style of Panamas (*Chiquitos*, *Chiriguano*, and *Chané*).

The *Páez* and *Moguex* make hats by coiling rush or straw and by sewing braid. This last, more common method is followed also by the *Lenca*. Leaves of the sugar palm are cut into strips and braided.

The industry centering around the weaving of the so-called Panamá hat thrives among the *Patuso* in Colombia, in Northern Perú, in Ecuador, and to lesser extent in Central American countries and Jamaica. All grades are made from palm. Weaving the ordinary hat requires 2 to 3 days; finer ones require 10 to 15 days; prices range from 50 cents to $100.

Especially in the northern part of the continent are there tribes who weave basketry bases or light supporting frames for colored feathers. Some Guiana foundations are like broad, flat rings up to 3 inches wide; others (*Bacaïri*, *etc.*), are straight-walled coronets (Roth, W. E., 1924, pl. 137; Koch-Grünberg, 1909–10, vol. 1, figs. 43, 44; Nordenskiöld, 1924 b, frontispiece; Schmidt, M., 1905, figs. 269–272). (Pls. 18, 21.) Among *Yamamadí* men feather crowns are worn on feast days, among *Jívaro* they are part of dance regalia, and among *Mojo* they have ceremonial significance. The ring or brim-type of headdress (Rio Negro tribes of Uaupés district and the *Arawak* and *Warrau*) consists of a pair of woven circlets with feathers inserted between their outer edges. (Cf. Koch-Grünberg, 1909–10, vol. 1, figs. 170, 226.) The coronet type (*Wapishana*, *Macushí*, etc., and Chaco tribes), has applied to it a cotton band to which feathers have been affixed. The *Bauré*, *Mojo*, *Chiquito*, and *Carajá* have huge feather ornaments mounted on basket frames (Schmidt, M., 1913–14, figs. 31, 32; Nordenskiöld, 1924 a, vol. 3, fig. 33). The *Mojo* make the largest

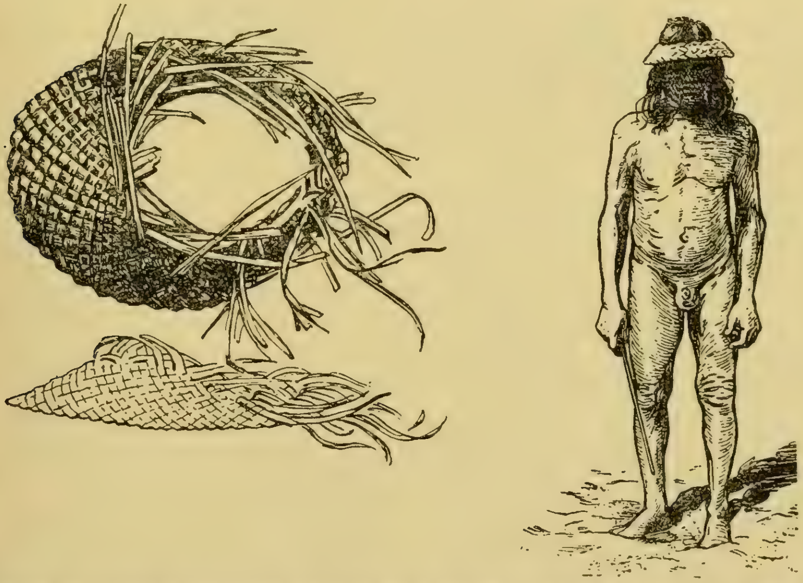

FIGURE 24.—*Carajá* eye shade made of palm leaves. (After Krause, 1911, figs. 33 and 34.)

ornamental headdresses in South America. Added to their principal feature, the arrangement of feathers, are rows of silver tubes.

Much less ambitious headgear is reported from two other areas: *Cayapó* maidens wear narrow fillets of reed to which they bind feathers, and the *Botocudo* contrive simple headdresses of palm leaves, their only basket-making effort.

Among basketry costume accessories are hollow cylinder belts (*Patamona* and *Macushí*), collars woven of fiber and covered with shells (*Jívaro*), and shields of strong wickerwork (Rio Negro tribes).

**Baskets for special uses.**—Basketry cages are made for young birds and animals (Guianas), for monkeys (*Yamamadí*), for parrots (Amazonian *Tupí*), and for transporting live crabs (*Cayapa*).

Basketry which has a part in ceremonial activities includes the following: The wasp frame constructed in the form of an animal, bird, or fish (*Apalaí*, *Macushí*). The main part measuring about 6 to 8 inches is wickerwork; the remainder is feather-decorated (Farabee, 1924, pl. 20). Ornaments carried in the *Caingang* dancer's hand or stuck in the ground are partially dependent upon basketry techniques. Tiny plaited squares and small objects are mounted on stakes.

Some tribes collect the bones of their dead in big, specially constructed baskets; these are either kept in the house (*Moré*, *Cumana*) or buried (*Caingang*, *Bororo*). The *Araucanians* sometimes make wickerwork coffins.

## MATWORK

Matwork is important in furnishing both necessities and comforts. The outer walls of some houses are formed of mats (ancient *Quechua* fishing villages; *Siusí*, Koch-Grünberg, 1909–10, vol. 1, fig. 49). The inner walls of matting form compartments for different families or screen off the bed space of the young girls (*Apinayé*) or the space where a birth is taking place (*Bacaïri*).

Among the *Aymara* and *Carajá* mats may be used as roofing (Krause, 1911, pls. 10, *1;* 13, *1*); in the Chaco they are set up to afford protection from the sun, or they may be woven as the principal shelter material of the hut. Among the *Lengua*, *Toba*, *Abipón*, etc., mats are stretched onto a framework of sticks so as to make both roof and side walls. When these tribes move, they take down their mats, roll them up, and carry them to the new location. Very early evidence of mats so used comes from the proto-Chimu bowl (Joyce, 1921, pl. M) depicting women weavers under a mat-roofed arbor.

Mats are housefurnishing, also. They cover the bare earth of the hut (*Paumari*, *Carajá*, *Bororo*); in many tribes they serve as mattresses (Krause, 1911, fig. 22; Schmidt, M., 1905, fig. 105; see fig. 25), as sheets of fine quality, and as covers (*Canella*). Some tribes weave mats for hammocks. The *Canella* make a temporary hammock by interlacing the tips of burití leaflets; the *Cayapa* make two mats for a child's cradle: the larger is the hammock proper, the smaller, placed crosswise, holds its edges apart. The baby sleeps on the smaller mat. The *Bororo* mother rocks her child to sleep in a mat suspended by its four corners. In Mato Grosso and the upper Xingú River district sitting on the ground is usually avoided, and small mats are common possessions. Sitting mats are made and used by fastidious young girls (*Wapishana*) and by fishermen, who expect to stay on a hot river bank for some time (*Carajá*).

As a temporary protection, stiff mats set just inside the gunwales of a *Cayapa* canoe arch upward to shield children and invalids from sun; small mats serve as "wrappers" to shade the *Apinayé* baby in its mother's carrying-girdle (Nimuendajú, 1939, fig. 23). (Pl. 20.) Among the *Sherente* and *Eastern Timbira* the girdle itself is a mat-like sling plaited of palm leaves (Nimuendajú, 1942, pl. 1, *b*). Mats are specially made to cover the contents of the open knapsack (Guiana Indians), and long mats cover drinking troughs (Caiarí-Uaupés River).

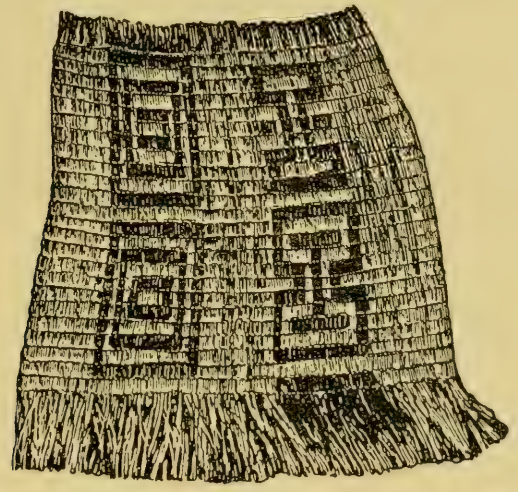

FIGURE 25.—*Carajá* girl's woven sleeping mat. (After Krause, 1911, fig. 22.)

In connection with food, mats are used to construct storage bins for grains (*Aymara*); as drying sufaces for cacao (*Cayapa*); as manioc presses (*Bora*); as covers for cooking pots (*Siusí*, Koch-Grünberg, 1909–10, vol. 2, fig. 148); as platters to serve food (*Patamona*, *Macushí*); and as strainers (*Huanyam*, *Bauré*, *Bacaïri*, *Carajá*). Some tribes use mats where basket forms would be expectable: the upper Xingú tribes roll feathers up in mats and the northeast Amazon tribes

(*Arecuna*, *Barima Carib*, *Macushí*) weave mats from which to construct shoulder bags.

Less frequently mats are used in burial of the dead (*Sirionó*, *Bororo*) and as masks of mummies' outfits (*Canella*). Rafts of the *Mojo* and *Paressí* are oversized mats, as were also the rectangular lug sails mentioned in early reports on Guiana Indians and the sails on modern *Aymara* balsas.

Most tribes make mats for their own needs; *Witotoan* tribes make them for their trade with the Whites.

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# WEAVING

By Lila M. O'Neale

True weaving, the interlacing of warp and weft elements at right angles to each other, usually with the aid of frame or loom, is known to many South American tribes. Some, however, fabricate hammocks, bags, etc., by plaiting, netting, twining, or other finger work; they do not weave, or their weaving is rudimentary. The *Yaruro*, northwest Amazon tribes, *Ge* peoples, *Bororo*, *Guató*, *Guayakí*, *Sirionó*, and tribes on the southern coast and of Tierra del Fuego are representative. Some tribes limit their weaving to narrow bands (*Yuracare*, *Huanyam*, *Chacobo*, *Huari*, etc.).

Investigators express doubt that developed weaving was ever done by the *Chocó*, the *Chibchan* tribes, and the West Indian *Carib*; the *Taino* cottons may have been netted or otherwise fabricated. Evidence also points to the disappearance of weaving from some areas. What is known of *Huarpe* and *Lenca* weaving is gleaned from old writers, since there are no available textile specimens. The same may be true of the southern *Guaymí* in coming generations. *Arawak* in the Chaco were formerly great weavers; *Omagua* and *Cocama* wove cloth for barter in the mid-seventeenth century; textile impressions on potsherds are sole direct evidence of former *Comechingón* wool (?) weaving.

By contrast, there is the phenomenon of development in modern times. Modern *Quillacinga*, *Pasto*, and *Coaiquer* developed weaving after the Conquest, using sheep's wool in addition to cotton; *Carajá* women learned weaving in the late 18th century on a loom introduced by a white man; the *Puelche* did not begin their weaving until the 19th century.

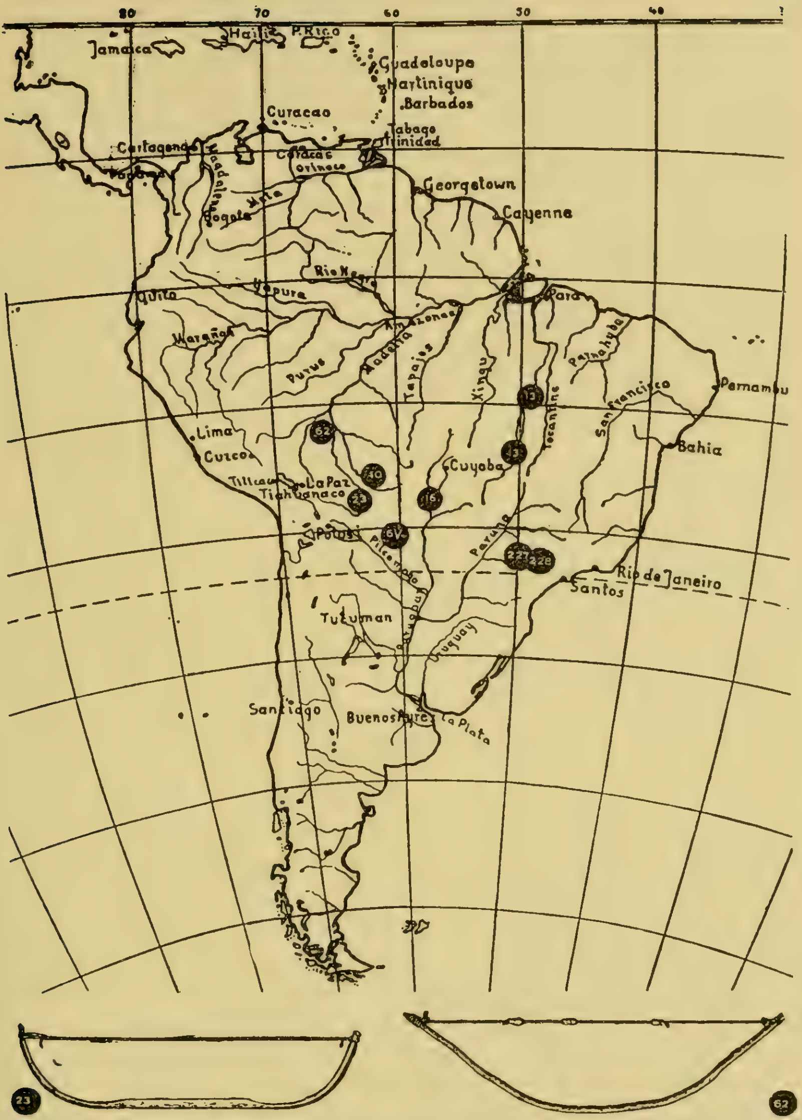
## SPINNING

**Cotton.**—Cotton was cultivated by pre-Columbian Indians, and apparently was spread to many tribes through *Carib* and *Guaraní* migrations. Wild cotton was collected, ginned, and spun by the *Aymara*, *Conibo*, *Macheguenga*, *Piro*, *Carajá*, *Northern Cayapó*, *Bororo*, Pilcomayo River peoples, and *Talamanca*. Cultivated cotton trees bearing white bolls range in height from 6 feet (*Tupí*) to 12 feet (*Mosquito* and *Sumo*) and even 15 feet (Huallaga River tribes); trees from 8 to 10 feet tall are common. Some bear continuously for 3 years, others from 7 to 10 years. Both white and brown cotton are cultivated (Ecuador, Perú); in Paraguay, yellow cotton is occasionally seen; among the *Chiquito* alternate rows of white and yellow cotton trees are planted. Small quantities of cotton are grown and spun by almost all Guiana Indians. The *Arecuna* are credited with teaching the *Macushí;* from them the *Wapishana* may have received their knowledge in recent times. Cotton bolls from planted shrubs or from those that come up perennially near the houses or in protected spots are collected in July and August, stored in leaf-lined baskets suspended from the rooftrees, and ginned by hand as needed.

Cotton is also cultivated by *Northwestern Ge*, *Carajá*, and eastern Bolivian tribes in some quantity; also, in the Chaco, not abundantly, and by Paraguayan tribes. Dobrizhoffer (1822, 2: 394–395) describes procedures among these last. Women collect ripe bolls daily and spread the cotton out on hides in the courtyard. If thoroughly sun dried, raw cotton may be safely stored for years. Women gin cotton in this area by passing it between close-set wooden cylinders; ordinarily, Indian spinners laboriously pick out the seeds with the fingers. *Mundurucú*, *Piro*, and Central American women beat raw cotton with small sticks to clean and separate the fibers; a few who came in contact with White civilization use the cotton bow, a device that reached South America during mission times. The cotton is fluffed by snapping the bowstring repeatedly on a layer of fibers spread out on a mat. Nordenskiöld's map (1924 a, table 25; see fig. 26) shows the *Carajá*, *Guató*, *Churapa*, *Guarayú*, *Chacobo*, *Guaraní*, and *Guana* as bow-using tribes; the *Moré* and *Kaskihá* also use the bow. The *Paressí* card cotton with a wooden comb.

Preliminary preparation of cotton fibers results in the following forms, which can be conveniently manipulated by spinners: Soft bands to be wound loosely around the left wrist in a position from which fibers can be drawn (*Arawak*); baskets full of fluffed cotton or loose masses mounted on sticks thrust in the ground (*Jívaro*); small masses mounted on short wooden distaffs tucked under the left arm, or in the belt, or simply a handful held during the spinning (*Quechua*); a loose pile in the spinner's lap (*Mosquito* and *Sumo*) or in the lap of someone sitting close by to assist the spinner (*Tupí*); and in a mat rolled into a loose cylinder.

Spinning is the most important single preparation for weaving processes, since fabric quality and durability depend largely upon yarn. Cotton yarns are hand spun by means of spindles. These slender-pointed sticks range in length from 8 to 15 inches (Guiana Indians, *Cayapa*, Peruvian tribes) to 18 inches (*Jívaro*, *Mosquito*). Generally the wood is hard (chonta palm), but the crude *Nambicuara* spindle shaft is a grass stalk. All spindles have whorls acting as balance wheels to steady the whirling motion. Materials and shapes vary;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Haiti
P. Rico
Guadeloupe
Martinique
Barbados
Curacao
Tabago
Trinidad
Cartagena
Panama
Caracas
Orinoco
Magdalena
Meta
Bogota
Georgetown
Cayenne
Rio Negro
Quito
Yapura
Para
Amazonas
Marañon
Purus
Madeira
Tapajos
Xingu
Parnahyba
Pernambu
San Francisco
Tocantins
Lima
Cuzco
Titicaca
La Paz
Tiahuanaco
Cuyoba
Bahia
Potosi
Pilcomayo
Paraná
Rio de Janeiro
Santos
Tucuman
Paraguay
Uruguay
Santiago
Buenos Aires
La Plata
62
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Figure 26.—Distribution of the cotton-cleaning bow in South America. (After Nordenskiöld, 1924 a, map 25.)

diameters are from 1 and 1½ to 2 inches. Most whorls are disks or discoidal forms; a few are rectangular (*Itonama*). More common materials, several of which often occur in the same tribe, are wood, drilled pottery sherds, tortoise shell, raw or sun-dried clay forms, bone, stone, and rock; less frequently mentioned are calabash, coconut shell, wild seeds, fruit, nuts, fruit stones, and wax. Decorated whorls are not common. Some wooden whorls are carved or incised (*Oyana*);

pottery is painted. Archeological specimens from Peruvian sites are usually patterned with small geometric designs.

There are two methods of spinning. The so-called "*Bacaïri*" method is done with a plain spindle shaft (Panamá tribes, upper Xingú tribes, *Aymara*, *Quechua*) or a shaft with a notch or small slit at one end (*Jívaro*, *Guató*), or with a hooked end (Guianas, *Wapishara*, *Carib*), or with a flattened ball top (*Carajá*, *Chiriguano*, *Chané*, *Apinayé*). Near the thickened lower end of the shaft is the whorl. This type, which is held vertically, is also called the Andean drop spindle. It has a wide distribution, and presumably spread in *Inca* times from its mountain place of origin to Coastal communities. The second spinning method is the "*Bororo*," also accomplished by means of a slender shaft with a whorl, but usually more carefully made than the "*Bacaïri*." It is rotated while in a more or less horizontal position.

Spinning by the older "*Bororo*" method is indicated by discovery of hundreds of beautifully formed spindles in Peruvian coastal graves; today it is practiced in a similar manner by tribes of eastern Bolivia and Ecuador. The *Chimane* spinner sits on the ground and supports her spindle between her toes and a wooden block; *Itonama* and *Yuracare* women support their spindles between forked sticks and blocks (Nordenskiöld, 1924 b, pp. 121, 191). The end of the spindle under the right palm is rolled on the block, giving motion to insert twist in the strand of fibers attached to the shorter spindle section below the whorl. The strand is slowly elongated by the movement away of the left hand. When sufficient twist has been given the length, it is wound on the longer section of the shaft.

The "*Bacaïri*" spindle is given a vigorous twirl with the fingers of the right hand or between the palms, then allowed to drop slowly to the ground, thus drawing out and twisting the strand of fibers attached to its upper tip. Highland spinners following this procedure make yarn while walking along the roads or going from one household task to another. Other spinners give motion to the spindle by rolling it against the thigh, then allowing it to whirl freely in the air as it drops (*Bacaïri*, Guiana tribes, *Western Tucanoans*, *Tupinamba*). The *Carib* woman stands or sits on a high seat and holds the strand of fibers high with her left hand to permit the spindle to revolve freely. Yarn accumulates on the shorter section of the shaft, above the whorl; she subsequently transfers it to the long section. Women sitting at their work may twirl the spindle in a special small pottery bowl (*Aymara*), or gourd (Caribbean Lowland tribes of Central America, *Conibo*, *Piro*, *Macheguenga*, *Mosquito*, *Sumo*), or on a small earthen plate made for the purpose (*Chané*), or on a shell (*Pauserna*). The *Piro* and *Conibo* dip their fingers into ashes in order to counteract perspiration. *Jívaro* methods require dexterity. The woman sits with a basket of raw cotton at her feet. She plunges the sharpened slit tip of the spindle into the mass and draws away the spindle, simultaneously twisting it rapidly between her fingers. At arm's length she reverses the twisting motion to wind up the length of yarn. The movements are outward and back, in principle the same as those of the drop method; they continue until the ball of yarn becomes too heavy to permit rapid twisting.

All yarns are initially spun single-ply; to form stronger yarns it is necessary to combine two, three, or multiple singles. Some tribes make the larger yarn by twisting two or more singles together on the thigh (*Piro*, Guiana tribes, *Guató*) ; other tribes combine the balls on two spindles by twisting on a larger, third spindle (Guiana tribes, *Carib*, *Arawak*) ; the *Guaymí* and *Wapishana* use a bow drill and spindle combination.

One noteworthy spinning achievement of the ancients has to do with doubling and redoubling single-plies an uncounted number of times. The *Inca* built suspension bridges of bark or fiber ropes spun to the thickness of a man's body. Several cables bound together formed a foundation for the plank floor; smaller cables formed hand rails. *Aymara* bridges of the same type are in use today.

Ropes are spun in some areas (*Lenca*) on wooden devices twirled in the hand. Two people stand at some distance from each other in an open space. Similar methods are used by maguey spinners in Central America.

Qualities of yarn are noted by observers. Tribes whose needs include cotton threads for binding heads to arrow shafts, garment materials, and hammocks obviously must consider yarn sizes and strengths. Guiana Indians make fine threads and coarse twines; *Jívaro* fine yarns compare favorably with our sewing cottons; *Yaruna* women spinners have been famous since Mission times for their spun yarns. As every authority recognizes, the ancient Peruvian spinnners produced superlatively fine cottons.

Cotton strands are effectively reduced to desired sizes by various procedures: preliminary to using the spindle, women of some Guiana tribes and the *Carajá* form a loose sliver by rolling the strand along the thigh; after the first spinning the yarn is respun onto a second spindle. The Guiana woman may rest in her hammock with one end of the spindle, which she turns rapidly with her fingers, placed between her toes. Successive spinnings make yarn thinner, stronger, and more uniform. The amount of twist given to each spindleful must be carefully regulated to allow for subsequent attenuations. Cotton for a hammock was taken by one *Tule* woman to form the strand into a sliver about a half inch in diameter. It passed to the next woman, who gave it a twist and passed it on down a line of some 20 women each of whom drew out the strand to lessen its size and impart sufficient twist to stand manipulation. The strand ended by being "about the size of ordinary wrapping cord" (Krieger, H. W., 1926, p. 110). Three-ply cord is occasionally made by chaining a single-ply yarn, then twisting the chain by spindle (Roth, W. E., 1924, fig. 11).

Yarn is usually stored as balls. These balls have value as trade goods: tribes in the Amazonas region barter with yarns; the *Arecuna* distribute spun cotton among neighboring tribes; in former times the *Chibcha* traded one manta with the *Panche* for sufficient raw cotton to weave three. Balls of cotton serve as currency. With little money in the country, as in the Huayabamba River district, almost every woman spins cotton. Balls of coarse yarn hang from the house rafters; four 1-pound balls represent the day's labor of the diligent spinner. As in Columbus' day, balls of cotton yarn are appropriate gifts for the guest (*Bacaïri*, *Mehinacu*).

Cotton is unknown on the Içana and Vaupés Rivers. *Witotoan* tribes obtain a little yarn from neighbors; the *Bora* use cotton but only for head ornaments. Cotton is neither cultivated nor spun by southern *Cayapó*, *Caingang*, *Botocudo*, and *Mashacalí*; the *Lengua* seldom use it. Among the peoples of Patagonia and Tierra del Fuego wool is used almost exclusively.

**Wool and hair.**—Four wool-bearing animals of the camel family are native to South America: llama, alpaca, vicuña, and guanaco. (See Gilmore, Handbook, vol. 6.) Of these, the llama has proved the most useful in bearing burdens, and furnishing meat and coarse fibers for strong, rough cloth of various yellowish-brown colors. The *Inca* regulated the care of flocks and accumulations of raw wool in public warehouses for distribution to each family according to needs. Upper Marañón tribes, *Aymara*, *Quechua*, *Uru-Chipaya*, *Chono*, *Diaguita*, and some Chaco tribes, spin and weave llama wool; the *Jívaro* used it for clothing in the 16th century. Alpacas are small animals that thrive in mountain pastures 10,000 feet and more above sea level. Their whitish, brown, or almost black wool is appreciated for its length and fineness. The *Inca* showed pronounced liking for alpaca wool to judge from archeological textiles; the *Aymara* and *Quechua* used large quantities of it. The luxury wool of the ancients was vicuña, darkish yellow in color, long, curly, finer even than alpaca, and always at a premium because from an animal never domesticated. To this silky wool the *Quechua* occasionally added viscacha and short-staple bat wool. Today vicuña is less often spun than felted for hats; pelts are cut up for blankets. Wool from the guanaco, also undomesticated, is used today by Patagonian tribes. The *Tehuelche* tease out the coarse fibers with the fingers to use in felts and to spin yarn for ponchos.

Sheep were introduced by the Spaniards; today sheep's wool is a staple wherever warm clothing is necessary (Andean tribes, the *Araucanians*, *Abipón*, *Chorotí*, *Ashluslay*, *Chiriguano*, *Chané*, and other Chaco tribes).

Operations preliminary to spinning wool fibers are few: sheared wool may be washed in cold water (*Araucanians*); or it may be spread out on platforms of palm leaves or bushes for rain to cleanse and sun to bleach (Pilcomayo River, *Lengua*). Usually women tease out the wool with their fingers or comb it with European hand cards. Wools are spun on drop spindles; the wooden shafts and the wooden, pottery, or stone whorls which give them balance are similar to corresponding parts of cotton spindles except for size. Prepared wool fibers are given one or another form: a band to wind loosely around the left wrist (*Quechua*) or arm (*Araucanians*) or a soft mass to mount on a wooden distaff stuck in the spinner's belt (*Quechua*). Old manuscripts show the same small wooden horseshoe above a short handle to be found in Highland markets today. A distaff formed of four sticks tied to make a standing rack is also used (Gillin, 1941, pl. 20, *2*). (Pl. 24.)

Highland spinners are almost always women and children. They make yarn incessantly, as they walk the roads or herd flocks of sheep on the pampas, as they sit in the market, or wait for their men. No matter how heavily burdened, the woman's two hands are usually busy with yarn and the falling spindle in front of her. If seated, she often rotates it on a small pottery plate.

Human and other hairs are treated as textile fibers: *Jívaro* men braid the long hair stripped from their enemies' heads, and tie the braid around their own waists to signify courage; the *Bacaïri* spin the hair of their dead; the *Bororo* plait neck cords and wrist guards of hair taken from mourners during funeral ceremonies; the *Guayakí* make ropes of human or monkey hair sometimes mixed with palm or nettle fibers; and Southern Hunters use horsehair for ropes. *Ona* witch doctors sometimes make a cloak of human hair, to use in bullying the tribe. In the 16th century some *Chono* made short mantles from the hair of a breed of long-haired, shaggy dogs.

Wool fibers are felted to make men's and women's hats (*Canipa*, *Quechua*, *Aymara*). Specialists in the craft meet a constant demand for their products; piles of hats appear in the open Highland markets. Styles and shapes differ with localities.

**Palm fibers, grass, and barks.**—Yarns, cordage of different sizes, and ropes are made of palm fibers: aeta (*Mauritia flexuosa*), tucúm (*Astrocaryum vulgare*), burití (*Mauritia vinifera*, *M. flexuosa*). Aeta fibers are taken from the young leaf growing from the center of the tree; they are separated from the skin, boiled, and dried in the sun (*Wapishana*, *Mascushí*, *Tucano*, etc.). Tucúm fibers are taken from the outer covering of the long, thin pointed leaves; they are spun by the *Yagua*, Vaupés River tribes, *Tucano*, *Bacaïri*, upper Xingú tribes, *Northwestern* and *Central Ge*, and *Nambicuara*. The burití fiber is virtually unlimited in some areas; each long tonguelike leaf yields a band of fiber elements. Burití fibers are spun by the *Guató*, *Timbira*, *Bororo*, *Carajá*, and many hammock-making tribes. The *Yaruro* strip the inner cortex of the moriche leaf, dry it, separate it into strands, and then moisten them to spin.

The method of producing a continuous strand by thigh-spinning is as follows: The spinner places a small flat band of fibers across the right leg (*Caingang* men and women) or the thigh (cf. Koch-Grünberg, 1909–10, fig. 128), and rolls the band downward into a single ply under his right palm. By combining this ply with others he makes cordage of required strength for nets, fishing lines, bow strings, bags, hammocks, etc. A procedure requiring greater dexterity results in two- or three-ply cords: the spinner places separate groups of loose fibers across the bare thigh, he rolls them downward under the right palm, and then on the return or upward movement of the palm, brings the two plies together into a single cord (*Yagua*, *Wapishana*, Chaco tribes). Wallace (1889, p. 342) states that Vaupés River Indians make string of aeta palm fibers "by twisting it on their breasts or thighs with great rapidity." Some tribes spin by rolling a strand of loose fibers together between moistened palms (*Aymara*, *Carajá*).

Cordage in various sizes is made by the *Aymara* from a kind of prairie grass (*Festuca dissitiflora*): by Guiana Indians from ixtle grass (*Bromelia* sp.); by the *Mosquito*, *Sumo*, *Wapishana*, and *Macushí* from silk grass fiber (*Bromelia*); by the *Lengua* from fibers from caraguatá (*Bromelia serra*). Caraguatá fibers are separated from the outer sheath by pulling them through a loose slipknot in a cord. This same method is followed to free fibers from wild pineapple leaves (*Ananas*). Sun-cured fibers are very white; Central American tribes and *Carib* use them for bowstrings and their smoothest cords. Two-ply string is common; three-ply string, each ply comprising three spun singles, is for ropes and durable articles.

When the *Mataco* spin materials obtained from Bromeliaceae they sprinkle a little powdered chalk on the leg to protect the skin from injury. Some Chaco women spinners smear their thighs with ashes. *Caingang* women spin *Ortiga brava*, probably a bromeliad.

Fibers are obtained from various barks (Panamá tribes), from the inner bark of the mallow tree (*Carajá*), from the bark of a species of *Cecropia* (*Mashacalí*), from the inner bark of the bottletree (*Botocudo*), from the inner bark of the embauda tree (*Macushí*), from sisal hemp (modern *Quillacinga*, *Pasto*, and *Coaiquer*), from majagua, a bark, and from cactus leaves (*Talamanca* and neighbors). All of these fibers are spun on the bare thigh. Women who wear skirts pull them up above the hips (*Tucano*); *Caingang* women's "newly acquired modesty" makes them unwilling to lift their dresses above the knee (Henry, 1941, p. 171); they roll the strands down the leg.

**Division of labor.**—Unless otherwise stated, one assumes that women do the spinning, particularly of cotton. Sometimes that duty implies (*Arawak*, *Carib*) that they also gather and prepare the fibers. Men's spinning is frequently limited to cord making (northwest Amazon), or is undertaken because the handling of certain fibers requires strength: *Arawak* men pull out silk grass fiber, although women may help if other male assistance is lacking; or, women (*Wapishana*) may be responsible for spinning ordinary hammock twines, but men make the heavy suspension ropes. *Jívaro* men do all the spinning when they have nothing else to do; *Tucano* and *Bororo* men make recreation of it. They bring prepared fibers to the communal center or clubhouse and work with others likewise employed. Both sexes spin among the *Aymara*, some Bolivian tribes, *Nambicuara* (thigh-spun tucúm and burití fibers), and *Lengua*.

## WEAVING

Ancient Peruvians perfected cotton and wool spinning to an amazing degree. On their primitive looms they produced extraordinarily fine textures, and in addition, they had imagination, ingenuity, and technical proficiency to develop unknown numbers of simple and complex weave-variants. Designs and color harmonies exhibit a confident sense of proportion which never fails to arouse admiration.

Weaving accomplishments of other South American Indians, taken as a whole, are less varied. The vastly superior civilization of the west is dimly reflected in borrowings of nearby tribes north and south, by some in the Chaco, and in Bolivian areas. Some Chaco Indians adopted the back-strap loom, slit (Kilim) tapestry technique, and the greater technical achievement, the warp-patterning techniques. By means of these last, lengthwise bands of motifs are developed; many warp-pattern borders are found in *Inca* graves.

From any standpoint, South American looms and their few accessories are simple. Each of the common types has an accepted name: Peruvian, "*Arawak*" or Amazon, and Río Ucayali. The principal weavings may for convenience be divided into three groups: (1) narrow weavings, to include arm bands, tapes, fillets, garters, anklets, sashes, garments of apron and breechclout types; (2) wide weavings, to include materials for shirts, ponchos, the tipoy, blankets; (3) hammock making. Each group makes certain technical demands upon weavers, and each requires some specialized equipment. Weaving appliances without heddles for control of certain warps are, strictly speaking, frames, not looms, but the differentiations are not emphasized in this article.

The majority of South American weavings have one feature in common: each is individually woven to desired size. From ancient to Conquest times there is no evidence of cutting down a woven length, and even today only the *Quechua*, *Aymara*, and a few neighboring tribes alter the original size of the loomed rectangle or tailor it to shape.

**Bands and narrow materials: looms.**—The narrow fabrics woven on miniature looms may be technically identical with, and except for widths, may look like wider garment materials woven on big looms. Some tribes (*Chacobo*, *Huanyam*, *Huari*, *Nambicuara*, *Yuracare*, *Ona*) weave only bands; other tribes weave them in addition to wide fabrics but have special looms for bands. Warp lengths on these are relatively short and easily manipulated. Weaving can be done without tools if the warps are held at tension. Guiana Indians weave some of their indispensible arm and leg bands in place with only the fingers; such bands are from one to two inches wide. The *Carajá* follow the same practice, weaving in place broad bands which cover nearly the whole forearm; they also weave some bands on wooden forms.

Warps may run vertically or horizontally. The *Auetö*, *Guató*, and *Bororo* weave wide belts on warps held taut by winding them around wooden stakes driven into the ground. Weft is inserted with the fingers, driven down with a wooden sword. For simple belts and fillets the *Cayapa* drive two pegs into a plantain stem and wind the warps around them. The weft is a ball of pita put from side to side of the web through spaces made by the fingers; these also drive down the weft. Elemental weaving is slow but meets the demands.

The Peruvian type loom is very old. One proto-Chimu example without a heddle is shown in scenes painted on the flaring rim of a pottery bowl (Joyce, 1921, pp. 177–180). (Pl. 25, *left.*) A similar loom from a Paracas Cavernas site is equipped with heddle (Museo Nacional, Lima, specimen 8465a). Highland looms of today are like these ancient looms in all essential features.

The Peruvian or backstrap loom consists of two end-bars to hold the warp skein at tension. Shed-stick and heddle-rod with loops for opening sheds through which the weft passes, a slender bobbin, and a relatively heavy sword for battening weft are standard parts. A tenter for maintaining uniform fabric width and pattern sticks for developing design motives are accessories. The upper loom-bar is attached by an inverted Y-shaped rope to a house post, or the bar may be supported between two upright poles (*Jívaro*), or, if the loom is small, the bar may be held behind the woman's outstretched feet (*Piro*). The weaver sits within the arc of a belt attached to the ends of the lower bar; she regulates the tension on the warps by the movement of her body. The warp plane may be almost vertical or horizontal, depending somewhat upon available space. Usually the adjustment gives the loom a slant; tools are more easily manipulated at an angle. Bands and narrow weavings are made on small backstrap looms by the *Quechua*, *Aymara*, *Jívaro*, and *Piro;* the *Omagua* and *Cocama* formerly wove arm and leg bands on these; east of the Andes only the *Mataco* know this loom (Nordenskiöld, 1919 a, fig. 62; see fig. 27) ; a *Chiriguano* band loom (ibid., 1920, fig. 55, *4;* see fig. 28) with warps held at tension between a short lower bar and a ring bears obvious relationship; a horizontal loom also suggesting ancient Highland origin was used by Montaña tribes; for *Sumo* and other Central American Indians the Peruvian type loom is the earliest known. *Araucanian* horizontal looms for belts and fillets are pegged out on the ground; the modern *Quechua* and *Aymara* may on occasion also peg out looms. These latter, as did ancient weavers, develop patterns by manipulating warps. For aids they sometimes put an extra heddle arrangement on the web; to vary weft colors they employ extra bobbins.

The "*Arawak*," or Amazon loom, like the Peruvian, has two parallel bars to hold the warp skein, but these are supported horizontally by upright poles. Warp elements on the Peruvian loom may be wound around the bars or the loop ends may be lashed to the bars; the warps on the "*Arawak*" loom are always wound around the bars; the finished fabric forms a ring. This is the ordinary loom of Chaco weavers. Two woven forms come from "*Arawak*" looms: one is a seamless band of cloth, a fabric tube; the other is a four-selvaged rectangle twice as long as the distance between end bars. The rectangle is the result of carrying the warp forward and back over a cord which can be pulled out of the finished web, thus separating the two ends (Nordenskiöld, 1920, fig. 55, *1*, *3*). (Fig. 29.)

"*Arawak*" type looms are sometimes referred to as band looms or as "simple squares made of four sticks" (Nordenskiöld, 1919 a, fig. 63; Schmidt, M., 1913–14, fig. 78). (Fig. 30; pl. 26.) The end bars of some miniature looms are supported horizontally by tying them to two uprights which stick in the ground; thus, the web is held in vertical position. The weaving sword is a necessity for close-textured materials. "*Arawak*" looms are represented in weavings of widely separated peoples. The *Cayapa* make their more elaborate wide belts and fillets as rings; the *Carib* and *Paressí-Cabishi* weave circular baby slings from 9 to 12 inches wide that pass over the mother's right shoulder and under the left arm; the child sits on the loop (Schmidt, M., 1913–14, fig. 30).

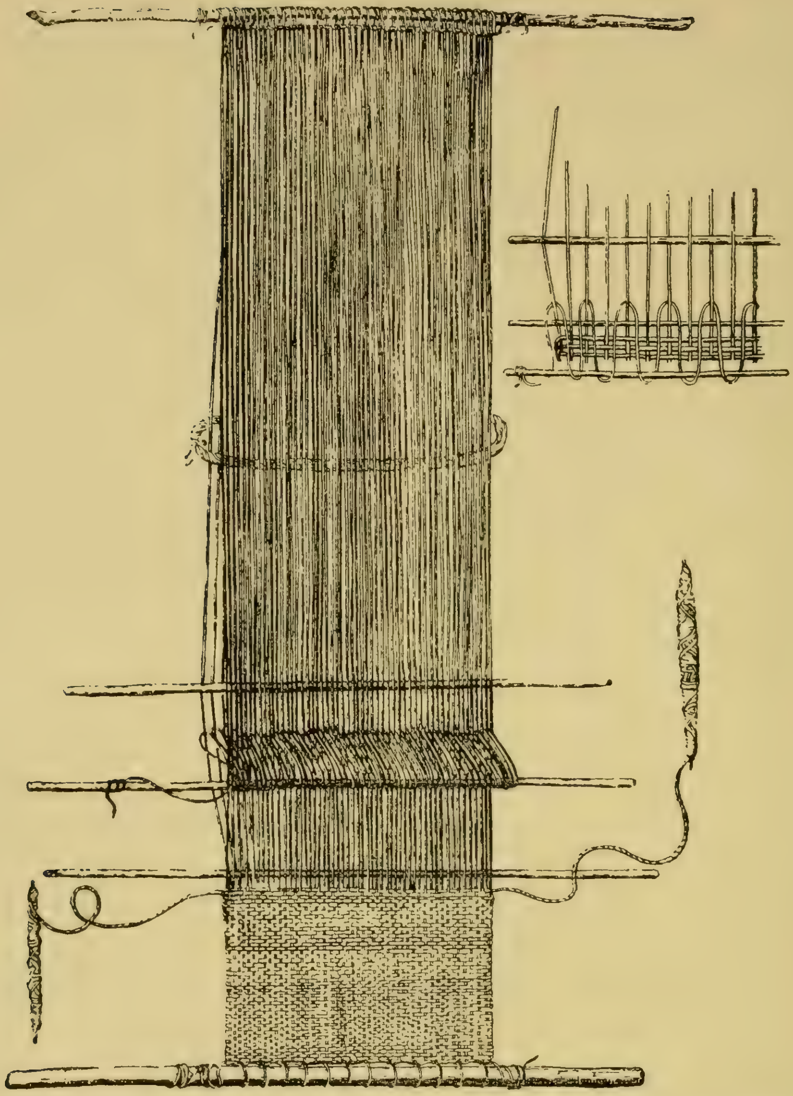


Figure 27.—*Mataco* loom. (Actual length 2.21 meters [7¼ ft.].) The warp in the diagram is somewhat shortened. (After Nordenskiöld, 1919 a, fig. 62.)

The *Guayarú*, *Mataco*, and *Toba* weave garters, fillets, belts, and bag materials; the *Nambicuara* limit their weaving to bands and belts made on small rough looms.

So far there is little evidence that the Río Ucayali loom was known to the ancient Peruvians. Among modern peoples on the Andes slopes and down into the Amazon areas it is not only a standard weaving appliance, but it assumes ingenious forms in different districts. The

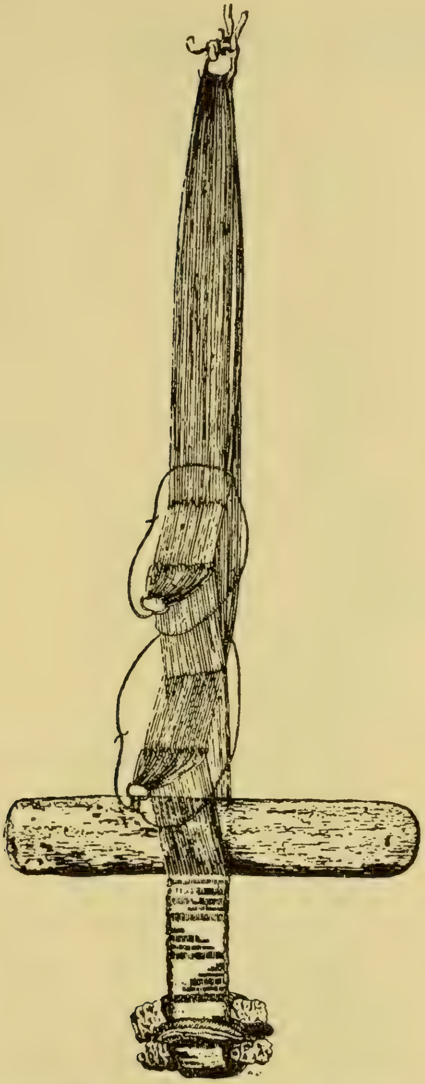


Figure 28.—Band loom from the *Chiriguano.* (¼ actual size.) (After Nordenskiöld, 1920, fig. 55.)

usual Ucayali loom (*Mojo*, *Moré*), roughly oval, is often contrived by bending to shape a piece of cane or liana and firmly tying the ends. The inner space is crossed with two parallel rods, or two cords, or one of each. These are the end-bars; around them goes the warp skein. Forms other than oval are reported from the *Ipuriná* (triangular), from Iquitos (pear-shaped), from the *Pauserna* (wishbone-shaped). (For illustrations, see Nordenskiöld, 1924 b, fig. 26, pl. 30, *h*).

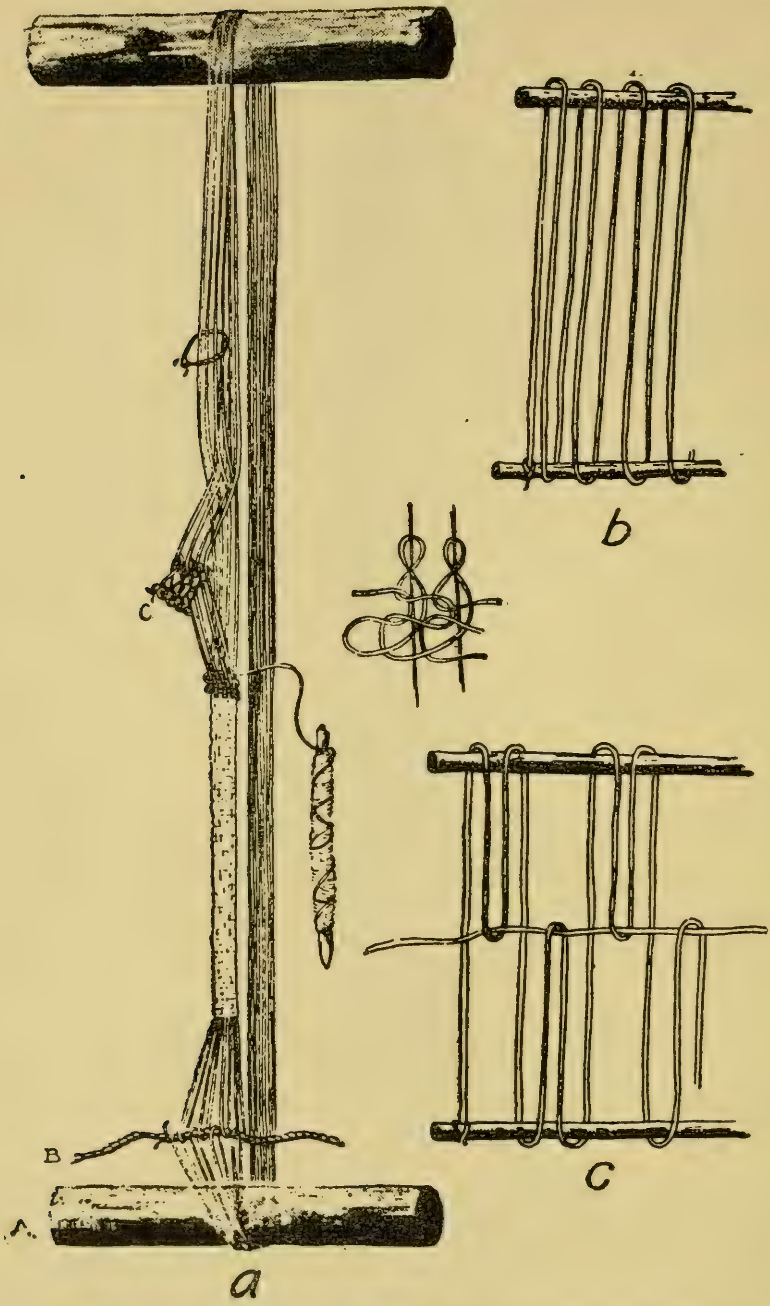


FIGURE 29.—Band looms of the Chaco. *a*, *Chané*, of the Río Parapití (1/6 actual size). *b*, Sketch shows how warp is set up in looms for *Guarayú* and other tribes. *c*, Sketch shows how warp is set up in loom figured as *a*. (After Nordenskiöld, 1920, fig. 55.)

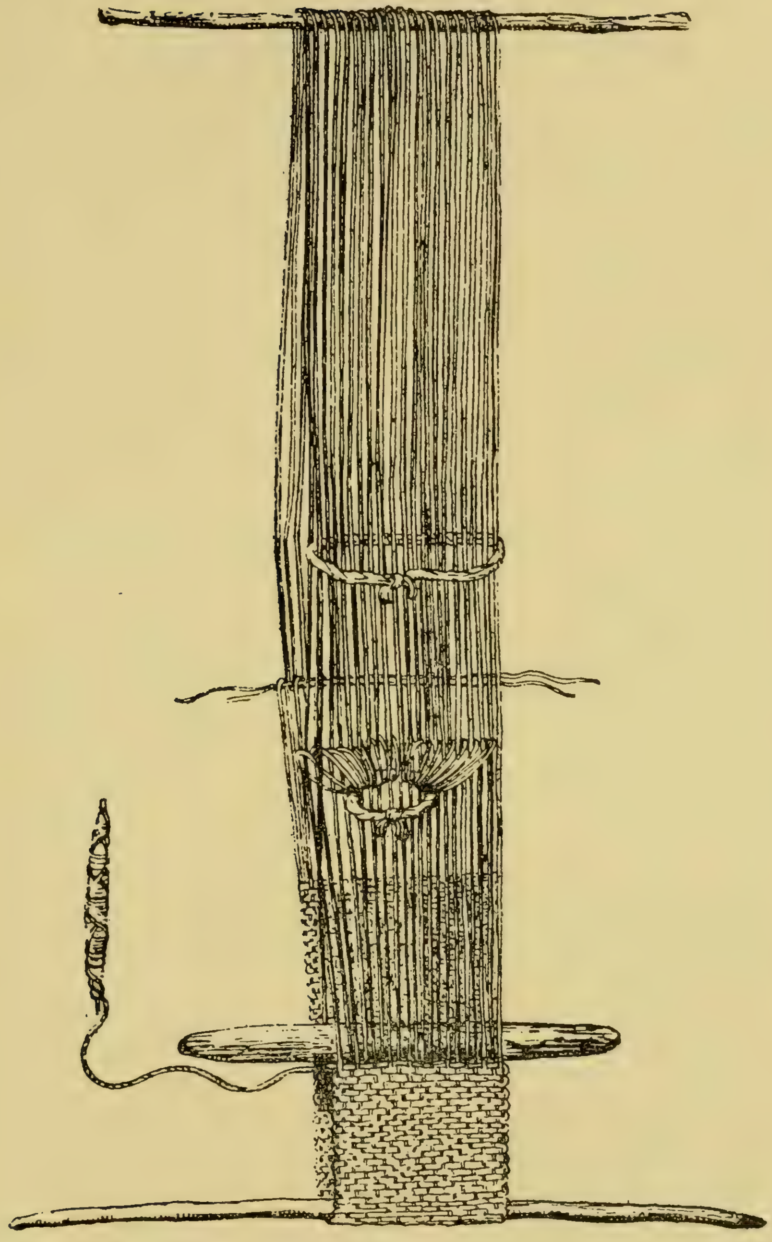


FIGURE 30.—*Mataco* loom. (Actual length 1.33 meters, or 4⅓ ft.) (After Nordenskiöld, 1919 a, fig. 63.)

Nordenskiöld lists the tribes using the Ucayali loom (1924 a, table and map 26), all of whom weave arm and leg ligatures or narrow bands. Techniques employed for these differ, judging by the photographs and drawings in his references. For the *Conibo* and *Cocama* bands, M. Schmidt (1907, pp. 270 ff.) has clear illustrations showing a background of over-two under-two weaving with pattern in twining technique. The transverse center point indicates that twining twists made at the proximal end of the loom were repeated in reverse at the distal end. It is customary to insert small sticks to preserve these rows of twists until the weaving progresses to a point where each stick can be replaced by a line of weft.

*Huanyam* (Nordenskiöld, 1924 a, map 26) and *Shipibo* bands (Farabee, 1922, pl. 16; see pl. 26) appear also to have been made by the method shown for the *Conibo*, and perhaps that on the loom from the Iquitos district (Roth, H. L., 1920, p. 124).

Ordinary weaving, without a pattern in twining technique, is suggested by Ehrenreich's drawing (1891, fig. 42) which shows an open length of warp (not a ring) on the *Ipuriná* form of Ucayali loom and on the *Pauserna* form illustrated by Nordenskiöld, although the authors' descriptions do not state that fact.

The Ucayali loom from a Rio Tiquié district (Koch-Grünberg, 1909–10, fig. 165) shows bands in process of construction. There is neither bobbin nor weft element visible. The set-up appears to have been prepared for multiple-strand plaiting (braiding). Whiffen describes the *Bora* and *Witoto* ligatures (1915, pls. 18–20) as having "the appearance of a knitted or crocheted fabric." No implement was necessary in what he calls "interworked and knotted . . . finger work only."

Tribes that limit their weaving efforts to bands use the Ucayali loom, which they adapt to two-element weaving with warps and wefts, to combinations of weaving and a technique from the basketry field of textiles (twining), and to plaiting.

Guiana women's seed- or bead-decorated aprons are made on small looms similar in construction but not in use. The apron loom is a bow roughly semicircular in form with one crosspiece attached to the ends of the withe forming it, and another as far above as the apron is long. How intricately these aprons may be patterned in colored beads can be appreciated from illustrations in several studies (Roth, W. E., 1924, pls. 154–157; Farabee, 1918, pls. 3, 21, 25, 31). (Pl. 27.)

**Garment materials: looms.**—Indian costumes for men and women consist of rectangular weavings differing chiefly in material and proportions. They range in width from narrow breechclouts to the cumbersome enveloping tipoy. Despite distinguishing details wider weavings fall in familiar categories: kilt, wrap-around skirt, shirt or tunic, mantle or shawl, poncho, blanket. For tipoy there is no satisfactory English equivalent; it is like a sack open at both ends.

Men in the Guianas and Mato Grosso area wear narrow G-strings between 36 and 72 inches long by 8 inches wide. Wider materials are woven to make unusual two-piece garments like short, tight-fitting bathing trunks (*Cayapa*), and coarse rectangular pieces about 3 feet wide to wrap around the waist kilt-fashion and tuck in at the side front (*Jívaro*, *Mapuche*).

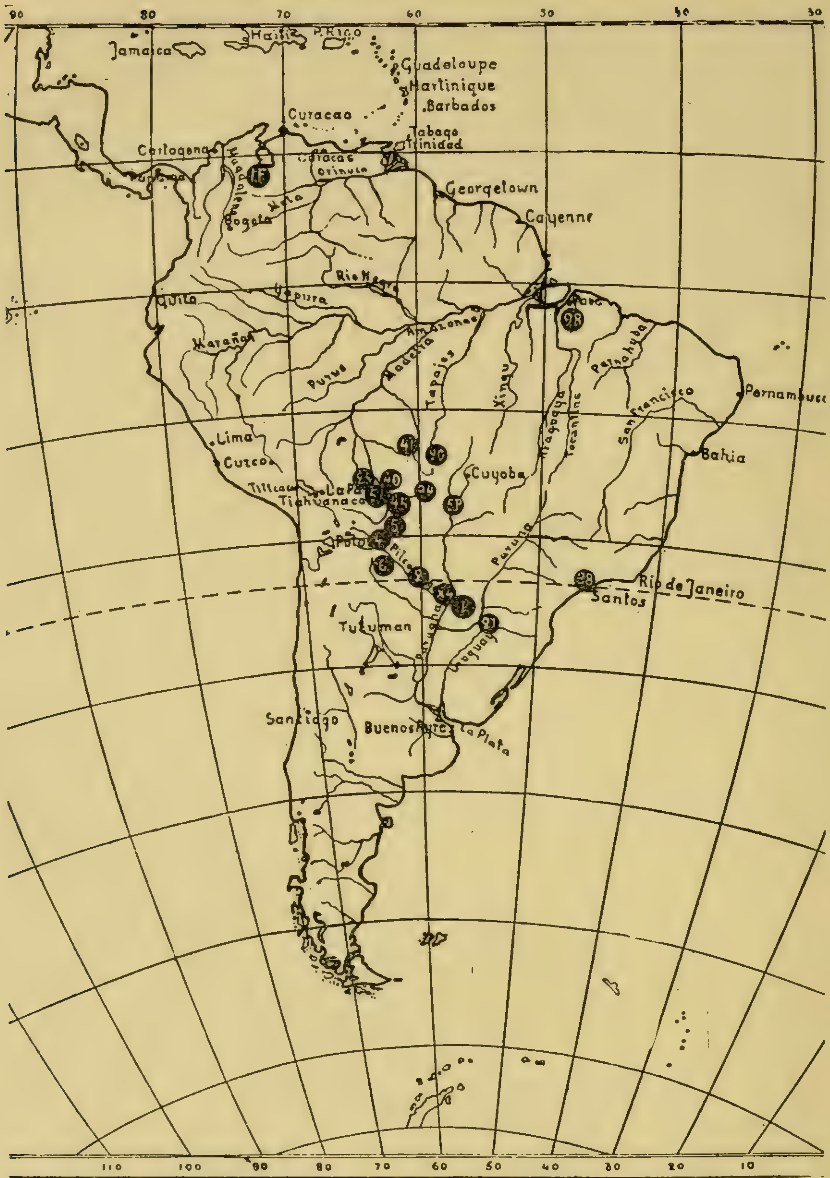
Women wear long skirts and shorter ones referred to as loincloths and aprons. Most skirts are wound tightly around the hips (*Tule*, *Cayapa*, *Jívaro*, *Piro*, *Chiquito*, *Mojo*, *Choroti*, *Ashluslay*, etc.). *Piro* skirts are one-piece rectangles sewn to form a ring. *Quechua* and *Aymara* women wear as many bright-colored wool skirts as they can afford to buy; in some districts they are long and very full.

The shirt worn by men (*Campo*, *Piro*) and women (*Chiquito*, *Mojo*), or occasionally by both in the same tribe (*Machiguenga*, *Conibo*, *Toba*), is generally a long sleeveless garment. Some Bolivian tribes wear sleeved tunics. The principal fibers woven in order of importance are cotton, wool, caraguatá (*Choroti*, *Ashluslay*). The materials are coarse loose textures in many tribes; close-textured in a few. The *Lengua* wove dense materials, for warriors' armor. The *Machiguenga* weave shirt materials in strips just twice the desired length, then cut on the transverse center for the two required breadths. The center and side seams have openings for the head and arms. Brides present their husbands with new shirts spun and woven of wild cotton.

The characteristic dress of women in a dozen tribes (Nordenskiöld, 1920, map 7) is the tipoy, a very wide seamless ring of cotton or wool cloth. (Fig. 31.) Stepping within the circle the wearer either turns the upper portion down over the belt to make a doubled section around the hips, or pulls it up over her shoulders to leave the surplus fullness at the front in a great pouch. *Chané* women carry their babies in this pouch (Nordenskiöld, 1920, fig. 21).

The mantle, shawl, or cloak is a universal article of costume, differing stylistically in size, shape, and decorative features. Most shawls from primitive looms are squarish and rectangular; they may be similar to blankets for beds, and they are closely related to ponchos. In Andean and other cold areas men are rarely seen without ponchos; they are of especial value to the horseman in conserving the heat rising from the animal's body.

Most of the garments mentioned are wide weavings. The term is flexible since it somewhat depends upon the loom type used. Weavers employing the Peruvian loom must sit at the center of the lower bar, thus they work more efficiently if the web is under 30 inches in width.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Orinoco
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Cayenne
Rio Negro
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Quito
Amazonas
Marañon
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Parnahyba
San Francisco
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Potosi
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Figure 31.—Distribution of the tipoy in South America. (After Nordenskiöld, 1920, map 7.)

(Cf. *Shipibo* loom in Farabee, 1922, pl. 14.) Weavers working on horizontal or vertical looms can readily shift positions to manipulate tools necessary in weaving much wider cloths. Except for the Ucayali, the looms used for wide weavings are similar to those for narrow bands and tapes. The *Aymara* and *Quechua* use the Peruvian loom, securing its upper bar to a house post or lashing it between upright poles (cf. Métraux, 1935, pl. 15, for the *Chipaya*); the weaver sits within the arc of heavy material attached to the lower bar. The *Jívaro* make fine garment materials and the *Piro* coarse cloths on the same type. To the present time this has been the only loom found reported from ancient graves (O'Neale, 1936).

The two-bar horizontal loom for wide materials is lashed to pegs driven into the ground (*Aymara*); the warps are heddle-controlled. The weaver uses a long rod for bobbin, wooden weaving sword, and pointed bone pick for supplementary battening. Andean peoples weave great quantities of strong durable wool materials by methods which show few if any traces of influence from European contacts. Weaving procedure is identical with that followed on the backstrap loom: the weaver works from each end and fills in the remaining space. Wide garments, ponchos, and blankets made on horizontal looms are sometimes woven as two separate four-selvage lengths subsequently sewn together, or a double-length strip is woven, cut in two on the transverse center, then the side selvages joined. In the Peruvian Highlands the four edges are bound with narrow woven tape. Large horizontal looms are also in use among *Shipibo* and *Uru-Chipaya.*

Two-bar upright looms supported by heavy side poles are comparable to *Navajo* looms, and are most widely distributed of those used for garment materials (Joseph, 1928, pls. 13, 16, 28). The *Inca* knew the upright loom; today many ordinary mantles and blankets come from it (*Cuna*, *Quillacinga*, etc., *Chimane*). *Jívaro* women wear large cotton mantles; these they wrap around the body leaving bare the left shoulder and pin the upper corners over the right shoulder. Such robes are girdled at the waist and bloused; babies are carried in the blouse part.

Coarse, serviceable clothes for ponchos are woven by *Araucanians.* Warping is done by two women who sit opposite two upright poles and roll the ball of yarn back and forth (Joseph, 1928, pl. 26). The poles ultimately become the upper and lower loom bars; *Araucanian* loom bars are supported by two side bars leaning against the house. The lower bar is lashed at the bottom; the upper bar is wound with the warp length. As the weaving proceeds upward, the warp is let out and cloth rolled up at the bottom. There is a heddle rod with loops crossing the entire web.

A blanket, belted at the waist is the *Lengua* man's chief garment. It may measure 7 feet 6 inches by 6 feet 6 inches. For so large a weaving two women must manage the warping. The loom's cross bars have been firmly secured in their places on the upright supports. The woman in front of the frame drops the ball of warp over the upper bar to the second woman who sits behind; she catches it, and passes it underneath the lower bar. The warps are placed closely to cover the bars for the desired width. A single heddle rod with wool loops crosses the face of the web; a ball of wool serves as bobbin; a heavy pointed stick moves along the shed to beat down the weft to the working edge.

The two-bar loom may be warped to weave a broad seamless ring of material, or by changing the warping procedure, for a rectangle twice the length of the distance between the bars (Nordenskiöld, 1920, fig. 55, *3*). (Fig. 29.) The "*Arawak*" loom for wide materials is found among such representative tribes as *Pauserna*, *Paressí*, *Chané*, *Chiriguano*, *Ashluslay*, etc.

Women are the weavers among *Quillacinga*, *Pasto*, *Coaiquer*, northwest Amazon tribes, *Lengua*, *Mataco*, and *Mosquito* (in the 17th century men wove). Men are the tribal weavers among the *Goajíro*, *Arauco*, *Jívaro* (make women's clothing as well as their own), *Nambicuara*, and *Bororo*. Among the *Aymara* the division of labor is today based upon loom types: women continue to weave on backstrap looms; men have learned to weave on four-harness European treadle looms introduced by the Spaniards (Métraux, 1935, pl. 16, *b*); both sexes weave on the horizontal ground looms. (Pl. 25, *right*.)

**Weaving techniques.**—Examination of the weavings from almost every area is yet to be undertaken; detailed analyses like Barrett's for the *Cayapa* (1925) and W. E. Roth's for the Guianas (1924) are outstanding; descriptions of actual fabrics are few and scattered. Much native South American weaving is good although it does not call for superlatives. The *Desano*, *Jívaro*, and *Mojo*, for example, have reputations as skillful weavers.

Textile analysts continue to discover variations of standard techniques and ingenious weaving tricks among ancient Peruvian cloths. One notable achievement was damask weaving, usually with warp pattern-floats. This type produces both ground material and pattern with a single set of warp and weft elements, no more than are required for the simplest over-one under-one cloth weave. Today fancy woolen tapes, belts, and decorative bands in larger textiles are woven in damask technique by the *Aymara* and the Chilean tribes. It is found also among the *Chané*, but may have been acquired recently from *Quechua* weavers. The damask stripes Nordenskiöld calls "ornamental borders" are woven by *Chorotí*, *Ashluslay*, *Mataco*, *Mbayá*, and *Lengua*. The *Cayapa* method of drawing up certain warp strands for pattern floats is described by Barrett (1925, p. 267 et seq.). The *Moré* and *Huanyam* insert slender sticks to raise the warps necessary to their patterns, and then withdraw each singly after it has opened its space for the weft yarn.

The greatest number of primitive weavings are plain cloth; these include ordinary garments like breechclouts, kilts, and shoulder mantles. Since quality is to a very considerable degree indicated by thread count, it is unfortunate that virtually none has been made. Evidence that unexpected fineness may reward future investigators is furnished by the unfinished tape on a small Ucayalí loom from the Iquitos area. The less than half-inch width has 49 warps, a count of 167 per inch. Much *Inca* plain-weave garment material is warp-face with wefts often invisible; modern *Aymara* ponchos are generally warp-face. M. Schmidt (1913–14, figs. 80–87) shows patterned warp-face stripes in *Paressí-Cabishi* weavings. (Fig. 32.)

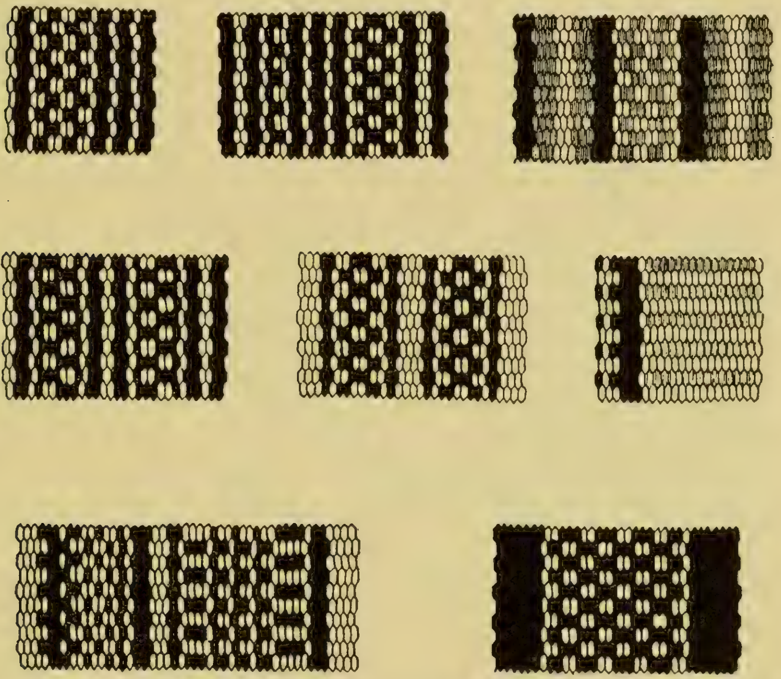

Figure 32.—Schematic weave patterns of the *Paressí*. (After Max Schmidt, 1913–14, figs. 80–87.)

Tapestry weave, identical to plain except that closely battened weft elements conceal the warps, yields a high weft count. Tapestries recovered from Middle Period Coastal sites are occasionally so fine as to appear like painted cloths. Heavy *Quechua* and *Aymara* blankets in demand today for rugs are in interlocking tapestry technique. The *Lengua* weave blankets in techniques and patterns similar to the old Peruvian; only the *Ashluslay* weave Kilim, or slit-type, tapestry, once much more widely distributed.

Brocaded cloths are not mentioned by name, but Lothrop's description (1930, p. 331) of elaborate "imbricated patterns" seems to indicate single-face brocading. If so, the *Picunche* make frequent use of the technique in ponchos and blankets; also *Huilliche*, *Cunco*, and *Chilote* weavers.

Pile weaving is done by the *Uru-Chipaya* on bags (Métraux, 1935, pl. 16, *a*), and by the *Mapuche*, *Cunco*, and *Chilote* on saddle blankets. It, too, is an ancient Peruvian technique found in ropelike objects of unknown use and for weaving four-sided caps (Lima area). However, the *Araucanian* pile technique (fig. 33) as schematically represented by Joseph (1928, pl. 22) is the variety known as Giordes, or Turkish knot, unlike Peruvian techniques.

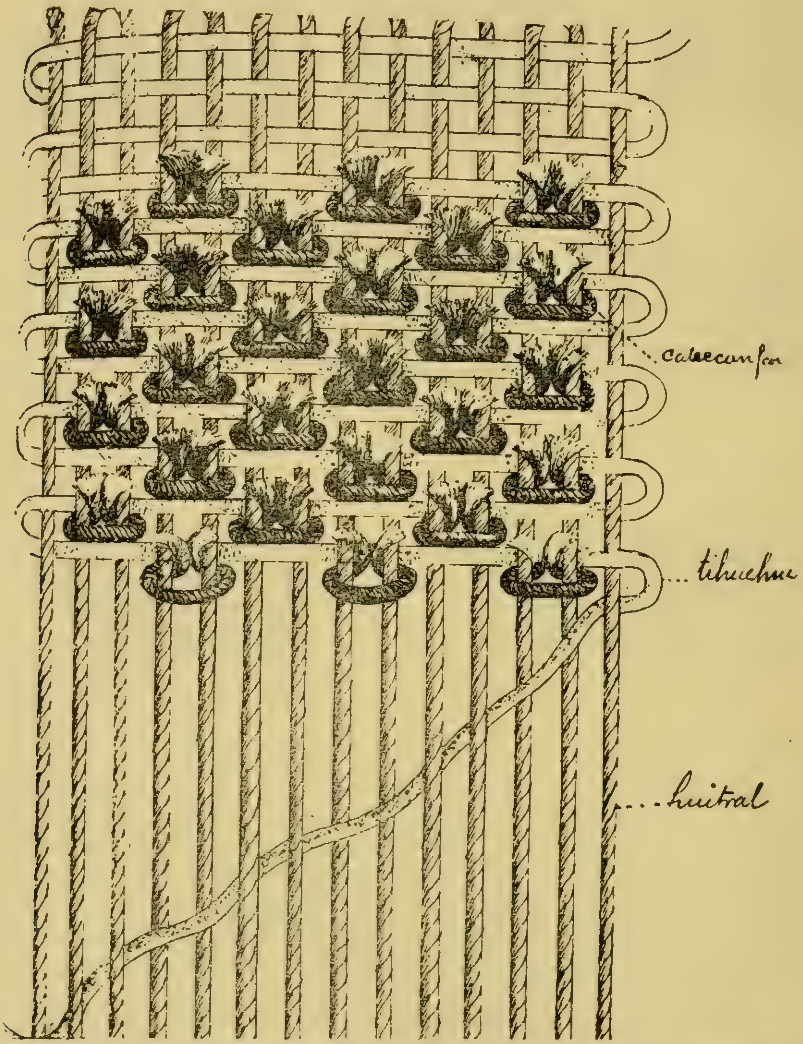

FIGURE 33.—Detail of weave technique of the *Araucanian* chañuntuco (choapino). (After Claude Joseph, 1928, pl. 22.)

## DECORATION: STRUCTURAL AND SURFACE

Textile patterns are of two types: (1) inwoven during actual construction on the loom; and (2) applied after the material has been taken off the loom. The first includes plain-weave of striped and checked patterns, and brocaded or otherwise woven motifs. Applied decorations include painted and stamped patterns, embroidery, affixed beads, metal ornaments, etc. This classification is extended to include fringes and tassels. In any patterning, color plays an effective role.

Ancient textiles from Peruvian sites comprise such variety of design motifs and richness of color harmonies as to discourage generalizations. The textiles of present-day tribes are not comparable. Phrases most often recurring in the meager descriptions of larger weavings are "lengthwise stripes" and "geometric motifs." The following characteristic garments appear to be always or generally striped: Coarse cotton fabrics in dull reddish browns worn as kilts and skirts by the *Jívaro;* white garment cloth with bands of brown and black of the *Guaraní;* mantles worn as garments by the *Colorado;* cotton and wool rectangles worn by *Toba* men and women; ponchos and blankets (sleeping) of central Chilean tribes; long wool ponchos of *Aymara*, *Quechua*, and *Chané* men. The women's tipoys are usually striped; warp yarns of contrasting color make broad and narrow bands, but as the garment is worn, these run around the body (Nordenskiöld, 1912 a, fig. 52).

Pattern motifs in most fabrics are in lengthwise or crosswise bands, usually within fields of color contrasting with the ground color (Métraux, 1935, pl. 17, c); *Cayapa* weavings illustrate this generalization (Barrett, 1925, pls. 113–115; 123–137; see figs. 34, 35). Although there is a certain generic similarity in these motifs regardless of their tag names, the explanation lies in the technical limitations of the loom. The *Araucanian* emphasis on step motifs (Guevara Silva, 1929, vol. 2, pp. 264–283) appears rather to be a matter of taste (pl. 24).

A few characteristic inwoven designs specifically mentioned are the following: Crosses, squares, triangles, etc., opposed in pairs, zigzags and checkerboard patterns, occasionally human figures, and horses (*Araucanians*); geometrics, chevrons, imitations of snake markings, and locally significant motifs (*Lengua*); stripes and squares (*Mataco*, *Paressí-Cabishi*); stepped motifs crossing the surface diagonally (*Caingang*); figures comparable to those in Turkish rugs (*Abipón*); geometric designs of the type known in ancient *Diaguita* pottery (Chilean tribes); diamonds, checks, zigzags, doll-like human figures, and llamas (*Aymara* and *Quechua*); and human figures (*Chiriguano*, *Chané*). These last two tribes did not usually pattern their large weavings.

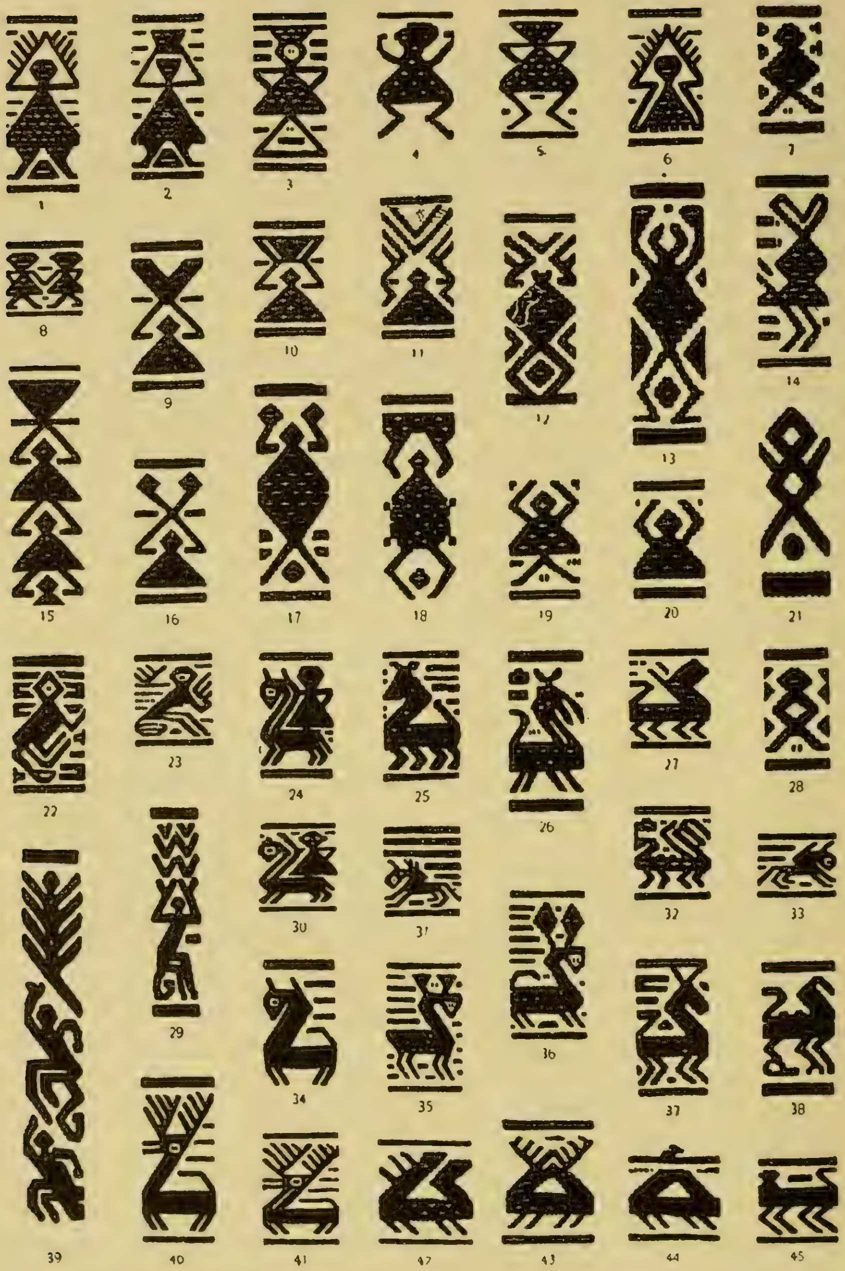
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FIGURE 34.—Cloth designs, human and mammal, of the *Cayapa*.. (After Barrett, 1925, pl. 123.)

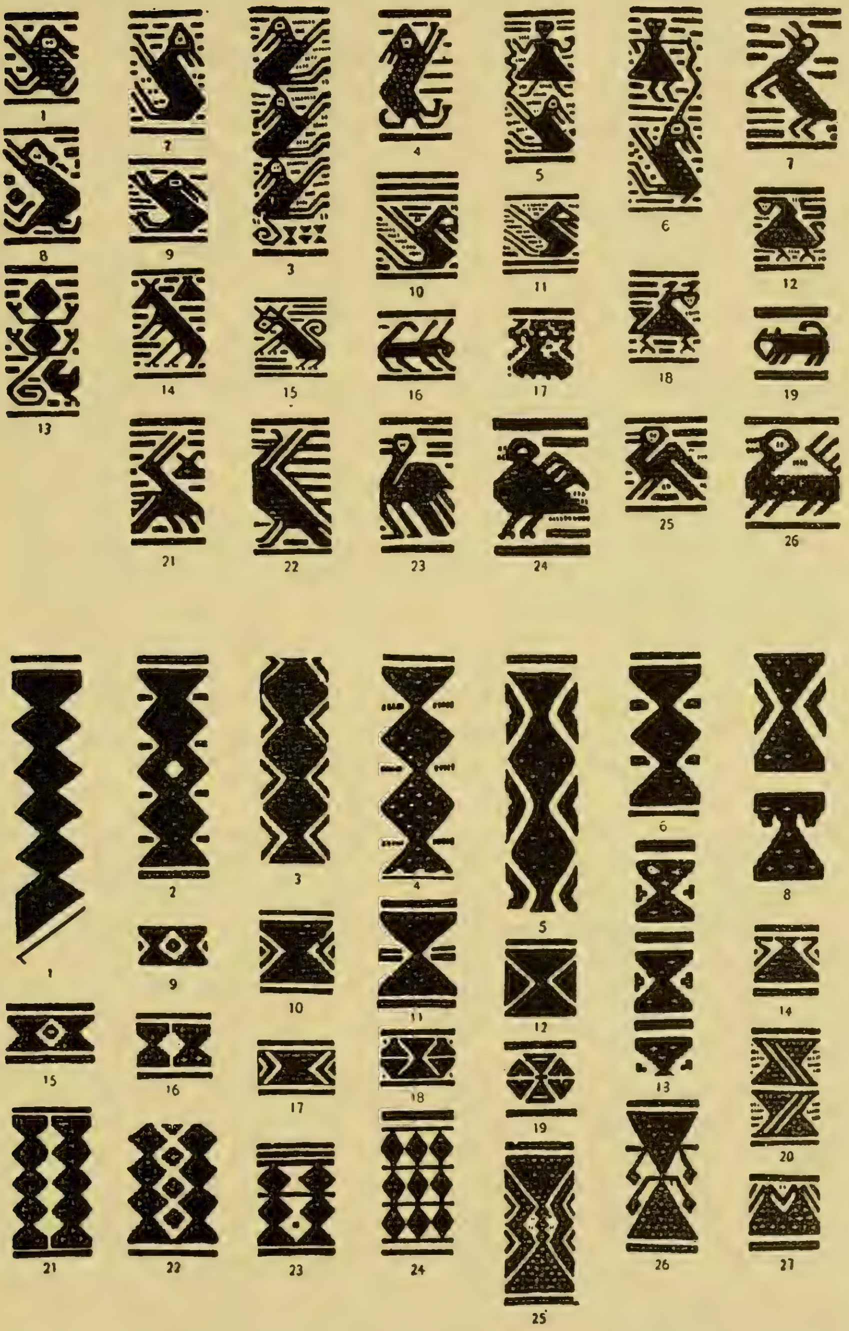
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FIGURE 35.—Cloth designs of the *Cayapa.* *Top group:* Bird, mammal, and insect forms. *Bottom group:* Geometric forms. (After Barrett, 1925, pls. 124, 126.)

Nordenskiöld (1930 a, p. 94 passim) points out that only the *Aymara* and *Quechua* were at a cultural level to make them interested in copying design motifs seen in the Conquistadors' textiles; that despite the introduction of large quantities of printed cloth, other tribes remained unimpressed. Ornamentation characteristic of *Chorotí* and *Ashluslay* weavings owes something to mountain influences.

Embroidery is rare among South American tribes; the celebrated needlework done by ancient Nazcans finds no reflection in modern times. The *Quechua* embroider their blouses, and *Aymara* women cover their arms from wrist to elbow with fancy half-sleeves that they keep in place with a tape passing around the neck. Cut, materials, and floral designs of their basquelike waists and sleeves are European. *Conibo* and *Shipibo* men wear embroidered trouser materials; the *Mataco* embroider their large leather bags; *Cuna* and *Tule* women appliqué shaped pieces of commercial figured materials to their long tunics, likewise made of commercial cottons. Fine workmanship among the last two means complete coverage with several layers of colored patches forming highly conventionalized animals, fish, snakes, human figures, and unidentifiable motifs. The applique technique is probably borrowed from the Whites; the ornamental style is Indian. In earlier times *Sumo* men of rank wore embroidered shirts which hung down to the knees.

Sewing and embroidery on cloth depend upon needles. Peruvians in pre-Columbian times knew the eyed needle; they made it by piercing a sharp thorn or a slender length of copper wire. Old workbaskets buried with their owners frequently contain several needles rolled up in a small mat. Needles with eyes reached some districts in the Chaco from the mountain civilization. They were threaded with caraguatá fiber and used for seaming and darning. When the Whites arrived, needles were a favorite article of barter. Some tribes (*Mojo*) do not yet have eyed needles; they contrive bone, wood, and thorn devices. The *Chorotí*, *Ashluslay*, *Toba*, etc., hold two light thin pieces of wood together by winding them with very fine fibers; the upper end has an open slit.

Mentions of stitchery processes are scanty, but any sewing of garments whether of homespun (*Jívaro*) or of commercial materials (*Mosquito*) is almost certainly in the hands of the men. *Jívaro* men have been the tribal tailors since the introduction of needles.

To affix feathers, shell beads, disks, and shaped metal pieces to a cloth surface is an ancient tradition. Shirts with ornamental bands and motifs in colored feather are known from pre-*Inca* Coastal sites (Means, 1931, frontispiece); sewing gold plaques to cloth was a favorite *Inca* device. Modern Chaco tribes sew colored feathers to cloth; *Chorotí* and *Ashluslay* weave with feathers, and also decorate bands with snail-shell beads. A red wool head band is the most valued, expensive accessory possessed by the *Lengua*. Some of their bands are decorated with small shell disks forming designs, and some with chin straps and side tassels. Tassels are mentioned as features of belts (*Cayapa*) and bags (*Lengua*). Long fringes are characteristic of the ponchos worn by *Aymara* of the Puno district, the *Chiriguano*, and *Guarayú*; short fringes from the down of the Muscovy duck edge cotton textiles (*Mosquito*, Indians of Caribbean Lowlands of Central America).

Cloth painted with a stick or brush or stamped with pottery cylinders is reported from a dozen tribes (Nordenskiöld, 1924 a, table accompanying map 29) living in the Northern Andes, their eastern slopes and south to the *Mojo* and *Yuracare*. The *Chibcha* painted with brushes and probably printed cloth with pottery cylinders, which have been found; one of their motifs was the inter-American step-fret. *Conibo* women paint the men's shirts while they are stretched on the ground. Conventional treatments include heavy lines of black paint on dark red shirts and lines of red or black on white shirts; other motifs are geometric. The *Jívaro* and *Machiguenga* (Farabee, 1922, pl. 2) sometimes paint their garments; the *Omagua* and *Cocama* formerly did.

Painted cloths are known from the early Nazca Period on the Peruvian Coast into *Inca* times. An especially fine lot of pre-Inca cloths were recovered at Supe.

### COLORS, DYESTUFFS, AND DYEING TECHNIQUES

Natural dyestuffs are plentiful in South America, and to judge by the unparalleled variety of colors in ancient Peruvian textiles, seem always to have been (O'Neale, 1937, pp. 136–152). Today, however, the *Quechua* and *Aymara*, once so adept at obtaining dyes from natural sources, depend almost exclusively on aniline powders; these are available in all larger Highland centers. In most areas mineral and vegetable dyes are gradually being replaced by commercial products; some Indians weave with ready-dyed imported yarns (*Quillacinga*, *Pasto*, *Coaiquer*). The time element is a factor in the change: *Jívaro* women do the dyeing because, as they explain, men do not wish to be tied down for the considerable length of time involved in the process.

The range of hues indicated by color names gleaned from the literature includes red (described as vermilion, carmine, bright red, dark red, pink); yellow; orange, tans, golden brown; blue; purple (violet, reddish purple, lavender); green; black; and gray. These are in addition to natural white and brown cottons, and the natural white, tan, brown, and black wools.

Two reds are important: those from cochineal and achiote or (urucú) sources. Cultivation of the cochineal insect (*Coccus cacti*) on its host, the nopal plant, for the production of dye was an invention of Indians of Middle America; it spread or was carried by the Spaniards southward to the Argentine Pampa. From cultivated nopal plants more insects could be gathered than from plants growing wild. Indians near Quito and in parts of Perú grew them; the *Chiquito* and other tribes gathered them from wild plants. A second widespread red dyestuff is anatto, or *Bixa*, often mentioned as body stain and as cloth dye. It comes from a shrub or small tree 8 to 10 feet high (*Bixa orellana*) known by its Spanish name achiote in Perú, and by urucú in Brazil. The tree is cultivated near houses of *Mosquito* and *Sumo* Indians; it grows wild in the Peruvian Montaña; it is familiar to many Indian tribes in tropical and subtropical South America (*Colorado*, *Cayapa*, *Jívaro*, *Yamamadí*, *Paumari*, Central *Carib*, *Camacan*). Although red is the usual achiote color, different Bolivian species yield black and green dyes. Anatto is obtained from the podlike fruit. When the pods burst upon ripening, each reveals grains the size of peas. The skin contains the coloring matter. Dry or fresh grains are pounded and water is added (*Abipón*), or the fruit is boiled for 24 hours until balls of coloring matter rise to the surface of the water. Fresh achiote seeds yield a bright vermilion dye; older seeds yield reddish brown. Red dyes from sources other than cochineal and achiote are coshque yuyi, used by ancient *Diaguita;* one of the Rubiaceae (*Relbunium hypocarpium*) by the *Quillacingo*, *Pasto*, *Coaiquer*, and *Araucanians*; carayuri by the *Tucano*; Brazilwood by the *Tupinamba*; catigua bark by the *Caingang*; and certain roots growing in marshy spots by the *Guaraní.*

Yellow dyestuffs are reputedly the most widely distributed in nature and the most easily adapted to textile uses. Lothrop (1930, pp. 333–335) gives nine different yellow, orange, and brown hues used by the *Mapuche* and *Chilote.* Barks and woods are the chief sources of yellows. Other dyes are made by the *Abipón* (from goldenrod), by the *Tucano*, *Guató*, and Chaco tribes (from *Acacia moniliformis* and *Caesalpinia melanocarpa*), and by the *Guaraní* (from *Peltophorum dubium*). Achiote for reddish brown is used by the *Jívaro* and lower Amazon tribes, fruit juices and clays by the *Waiwai*, and guayacam seeds and flowers by the Chaco tribes. *Carib* tribes have words for orange, golden, and brown. The ancient *Diaguita* obtained yellow from molle and coffee brown from aspinnillo and mistol.

The principal natural source of blue is indigo (*Indigofera suffruticosa*). Leaves from the mature plant are pounded in stone mortars by the *Abipón*, then steeped in cold water. The coloring matter settles on the bottom of the container to become the solid cake subsequently ground to a powder to make the dye. The indigo plant grows wild in Paraguay; tribes to the north (*Chiriguano*, *Chané*, *Chiquito*) cultivate it; *Araucanians* obtain indigo by barter. Other sources for blue dyestuff are the fruit of the jagua palm (*Quillacingo*, *Pasto*, *Coaiquer*), a mixture of quills and alpapoca plant juices (*Quechua*), asuque (ancient *Diaguita*), a bark (*Mapuche*), and arrisaura berry juice (Essequibo River tribes).

Green is less common in primitive textiles than its blue and yellow components, but the *Mapuche* have four greens (Lothrop, 1930, p. 333). *Abipón* women make dye of the bright green leaves of a shrub; they also combine blue and yellow dyes; *Cayapa* get green from a locustlike shrub.

One of the world's ancient sources of purple was a certain shellfish. A similar source (*Purpura patula*) is still available in El Salvador for relatively small quantities of cotton yarn; it is largely extinct in South America. *Cayapa* get lavender from an ocean univalve, but most of the purple dye comes from the vegetable kingdom. The ancient *Diaguita* obtained violet from cardon; the *Guató* from barks, the *Botocudo* from leaves (tinta capishaba), the *Arawak* from fruit juice (*Renealmia exaltata*), and the *Mapuche* from fruit.

Black from natural dyes is rarely jet; rather it suggests an exceedingly dark blue, brown, green, etc. Bark is the source of *Cayapa*, *Mosquito*, *Sumo*, *Guató*, and *Chiquito* blacks. Bark and earth used together make the black of some Chaco tribes; Patagonian tribes use earth on their wools; *Genipa* fruit juice (*Botocudo*), juice from a wild species of guava (*Carib*), and sap of *Genipa* (*Tucano*) make black dyes. The *Conibo* have two blacks, from algarrobo and churgui. The ancient *Diaguita* got gray from white algarrobo and alamisque. *Mapuche* and *Chilote* grays and blacks come from shoots, leaves, branches, etc.

Burial in mud for 4 or 5 days changes to black the straw-colored bast used for *Apinayé* necklaces. Burial in clay with branches of *Phyllanthus* for several days gives a good black to fabrics of the *Quillacinga*, *Pasto*, and *Coaiquer*.

Numerous references are made to color fastness; some of it is undoubtedly the result of competent methods. Raw-stock dyeing produces the most complete saturation of the fibers. According to Cobo, the *Inca* always dyed their wool before spinning. The ordinary procedure followed is skein dyeing; piece dyeing is less frequent among primitive craftsmen, but lower Amazon tribes immerse their completed weavings for some hours in large gourds containing anatto, and the *Botocudo* leave bast fibers for 24 hours in the purple dye liquor.

A mordant aids in achieving clear, fast colors. Two very common mordants mentioned are urine (*Aymara*, *Abipón*) and alum (*Abipón*).

Reserve- or resist-dyed textiles are recovered from graves of Perú, Argentina, and Bolivia. The simplest form of tie-dying is done by pinching up a bit of the fabric and winding string tightly around it. After the cloth is dyed, dried, and the string removed, the protected portions show as squarish white spots on a colored ground. This procedure was known to ancient Peruvians. A second method, also exemplified by archeological finds, produces striped patterns. The piece of cloth is rolled up and tied with cords at regular intervals before dipping it in the dye. These simple methods survive today among *Mataco*, who tie-dye bark cloth, and Indians of Calilegua in Argentina.

Tying on cords to protect certain sections of one or both weaving elements before they are interwoven is the ikat process named from the Malay word to tie around. Rare finds of textiles patterned by ikat are reported from Peruvian graves. *Araucanians* make patterns after ikat methods either by wrapping sections of the wool warps with string and bark, or by covering sections with paste of white clay, then winding wool threads tightly over each daub (Joseph, 1928, pls. 36–38). Ponchos with ikat patterns are rare and expensive. The usual colors are blue with simple geometric designs in white; occasionally, the principal color is red. For a discussion of tie-dying, ikat, and batik (introduced into America by Europeans) and their relationship to negative painting, see Linné (1934, pp. 162–166).

### HAMMOCK MAKING: WEAVING, TWINING, NETTING

The hammock, an Indian invention, has wide distribution with concentration in the Orinoco-Amazon region. It is lacking in Andean and Chaco areas, and among certain tribes (*Bororo*, *Yuracare*, *Chimane*, *Moseten*, *Chama*, *Jívaro*, *Carajá*, etc.). The *Carajá* "hammock" is in reality a garment drawn over the head to cloak the shoulders and back.

Hammock materials are chiefly leaf fibers, bast, and cotton. Inner barks are pulled off, split into small strands and dried (*Tule*); pinnate leaflets of the tucúm palm are shredded with thumb and forefingers. Thigh spinning combines singles into double-ply cord (*Witoto*, *Tucano*, *Yagua*). Palm fiber is commonly used for hammocks throughout the Guiana region, and balls of spun fiber are an important trade item in some districts (*Tucano*); caraguatá fibers (*Bromelia*) are used by the *Lengua*; maguey (*Agave americana*) by tribes in Central America. Smaller *Carib* hammocks are sometimes made of aeta palm warps and cotton wefts; similar combinations are reported from the *Auetö*, *Mojo*, and some *Arawak*-speaking tribes on the upper Xingú. The idea of using cotton has spread among bast-using tribes (Guianas, *Bacaïri*, *Chané*) chiefly through the *Carib* and *Guaraní*. Tribes that have not completely substituted cotton for bast still use both materials. Cotton hammock cord must be strong. Ordinarily, two or more spinnings are given to reduce the size and make the strand more uniform (*Tule*). The *Arecuna* grow, spin, and distribute spun cotton in a district where hammock making is very important. Twine is offered for sale or exchange in big balls of sufficient size to complete one hammock. The *Paressí* and *Mundurucú* also make fine cotton hammock twine. Among the *Central Arawak* there is much trade in hammocks with the Whites; the makers vary the sizes, textures, and qualities. Provisional hammocks are fashioned by Guiana Indians from bush rope and lianas; the *Apinayé*, *Eastern Timbira*, and *Sherente* make only this type by plaiting together tips of burití palm leaflets. The hammock length includes that of the bed plus the length of suspension cords. Guiana Indians set their poles from 5 to 7 feet apart; bamboo supporting frames may be from over 6 to nearly 10 feet in size (lower Xingú); the ordinary *Paressí* hammocks are often more than 10 by 4 feet; the regulation length of hammocks on the Rio Negro reaches 15 feet.

Hammock techniques include the following:

(1) True weaving by interlacing warp and weft elements as in cloth making. *Tule* and *Cuna* weave on a frame of poles bound together with vines. Each *Tule* village has several of these, communally owned. There is no heddle arrangement: weft is put through with the fingers; the battening sword is the only tool. Thick clothlike hammocks are made among tribes in Venezuela and Columbia; in northwest Brazil they are woven on *Arawak* looms equipped with shed roll and heddle stick with pendent loops. The weaver has bobbins and a weaving sword (Koch-Grünberg, 1909–10, vol. 2, fig. 135). (Pl. 28.) W. E. Roth (1924, pp. 386–392, figs. 207, 208) gives details of tools and procedures (figs. 36, 37). Although there is some doubt regarding the technique employed by lower Xingú tribes, their hammocks are said to be clothlike in texture.

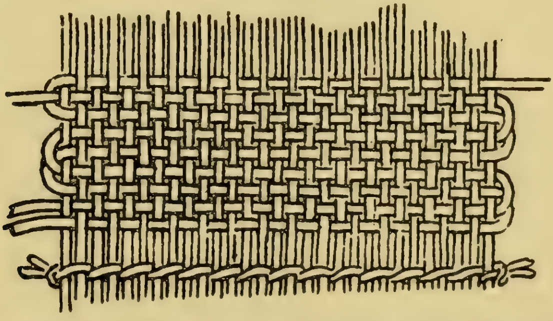


Figure 36.—Pattern of *Macushi* cotton hammock. Made with two continuous weft strands, by males of tribe. (After Roth, W. E., 1924, fig. 207.)

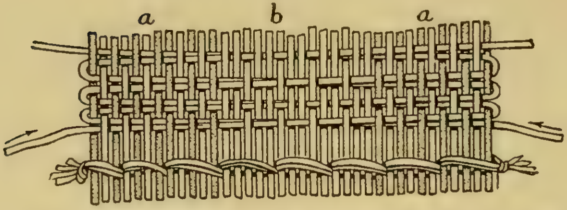


Figure 37.—Pattern of cotton hammock used by *Macushí*. Made by crossing each of the two strands composing a bar (weft) from opposite sides. (After Roth, W. E., 1924, fig. 208.)

(2) Nordenskiöld (1920, p. 164) writes of "hammock-netting" as "the usual technique which gives the so-called barred hammocks." His illustration (ibid., fig. 49, *b*; see fig. 38) is identical in principle to illustrations in W. E. Roth (1924, figs. 195 et seq.), described as "chain twists." These are the single-twine techniques of basketry. In the Guiana region hammocks with twined "bars" are made on frames consisting of two upright poles sunk in the ground, on upright frames without or with head sticks like the ordinary *Arawak* loom, and on special contrivances for holding warps taut (*Cubeo*). Warping is done by different methods; women in some Guiana tribes walk around and around two poles carrying big balls of cotton string in their hands. Warps are spaced and slack is eliminated as work proceeds.

The warp skein in barred hammocks is crossed at regular intervals by two twining weft elements or by two pairs of countertwined weft elements. Wooden gages maintain uniform distances between the bars. The side of the *Paressí* hammock edges are broken by small tassels formed by knotting the ends of the weft elements (Orchard,

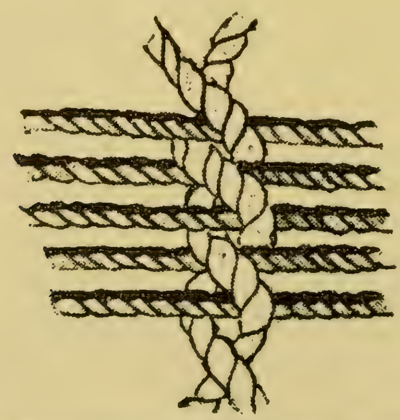


Figure 38.—Detail of weave technique of *Chiriguano* hammock. (After Nordenskiöld, 1920, fig. 49, *b*.)

1928, figs. 30, 31). Koch-Grünberg (1909–10, vol. 2, figs. 131, 132) illustrates a *Cubeo* "frame" consisting only of a supported horizontal pole with a wooden hook at each end, the space between hooks representing the length of the hammock. Lengths of weft in pairs are attached along the bar, and these enclose in a twist each successive pair of warps placed in position between the hooks. With the enclosure of the last pair of warps the hammock is finished.

Simple twining appears in hammocks from *Tupí* groups, from *Mojo*, *Chiriguano*, *Bacaïri*, the Guapore River, etc.

(3) *Cayapa* hammocks are netted with coarse pita string. No mesh gage is used, since the meshes are from 4 to 6 inches on a side. The term netting may have been used more often to indicate appearance than technique. The *Warrau* make "purse net" hammocks on square wooden frames raised up from the ground; the hammock cord is a continuous length. Held in a long skein, it is stretched to make a warp element between the end-bars, then is returned to enclose it and the previously stretched warp in a wrapping coil (Roth, W. E., 1924, p. 396, fig. 209). Whiffen (1915, p. 98) gives as *Witoto* procedure that the cross strings are "knotted" from one edge string to that on the opposite side. The hammock frame consists of two posts driven into the hut floor; the only tools are the women's fingers. Finely netted bases of palm string are characteristic of the feather-decorated hammocks of northwest Amazon tribes; *Tupí-Cawahíb* net small hammocks. Women on the upper Xingú in netting hammocks use a wooden needle. "Looped" bast-fiber hammocks are reported from the *Tule* and *Chocó*; "coiled netting" for the *Guaymí* (Lothrop, 1937 a, fig. 82). (Fig. 39.)

Plaiting is mentioned by Im Thurn (1883, p. 288). Guiana tribes use three shuttles to enclose each long hammock warp in a unit of three-strand braid; cross bars are spaced.

Men and women, but especially women, make hammocks. The latter frequently make the bed, and men add the heavier suspension cords, which are adjusted to make the hammock hang evenly. Men and women work on the same hammock in Guiana tribes; among the *Bora* it is woman's "light work."

Hammocks are colored in various ways: by painting while yet on the loom (Guianas), and by striping with colored string prepared before the fabrication is commenced. The *Auetö* alternate dark blue and white bands of cotton weft on tucúm warp; the *Tucano* set up blue, yellow, and red stripes; the *Arekena* set up multicolored stripe patterns.

Hammocks with striking decorations of feathers are made by Rio Negro tribes. Herons, tanagers, parrots, and other birds furnish white, red, orange, blue, and metallic greens which the Indians work into

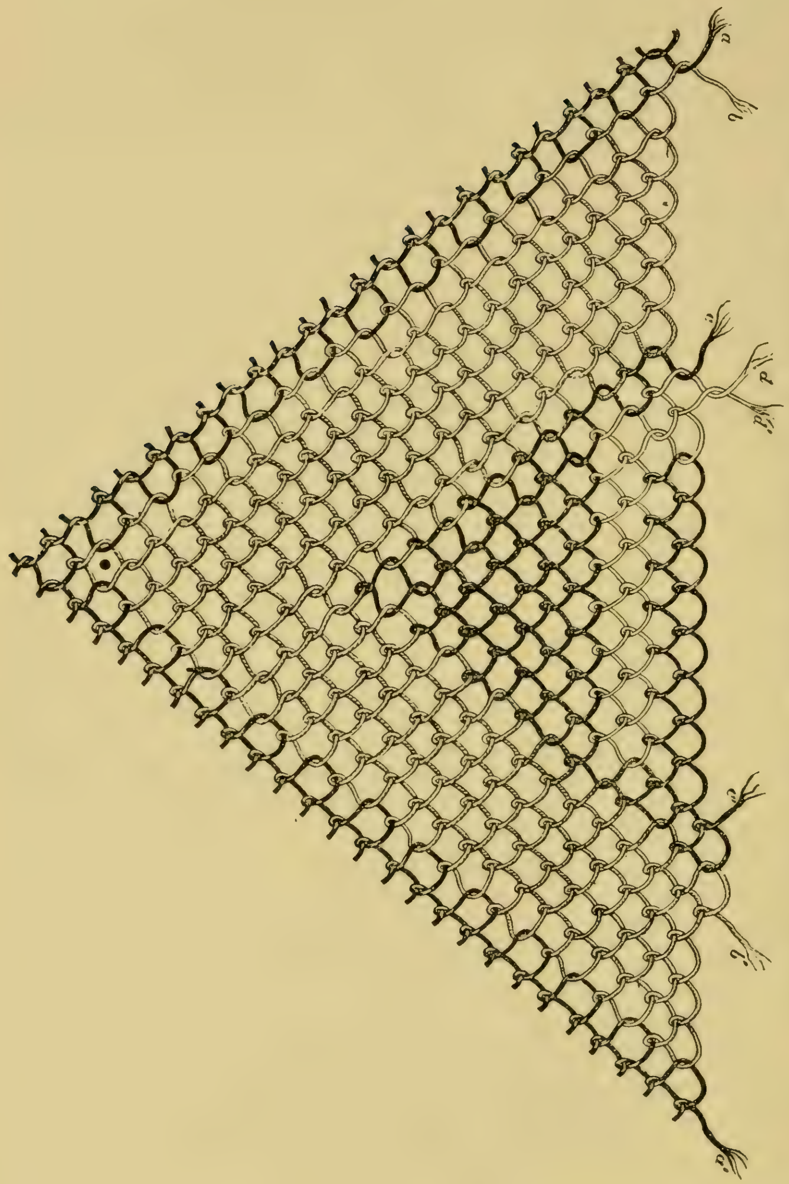


FIGURE 39.—Enlarged detail of modern *Guaymi* bag. (Note black dot near apex for comparison with fig. 41.) (After Lothrop, 1937 a, fig. 82.)

designs in deep fringelike borders. A netted base of finely spun tucúm may be completely covered with white heron feathers as a field for smaller contrasting designs, such as leaves, flowers, and birds. Observers agree that the work is skillfully done and pleasing in effect. As early as 1850 (Herndon and Gibbon, 1853–54, 1:270) the *Yagua* exported "ordinary," "superior," "cross-striped" hammocks at prices ranging from $1.50 to $5, and feather hammocks at $30. The numbers sent out were 40, 15, 100, and 2, in the order given. Extravagant prices from $100 to $300 have been recorded for feather hammocks.

### MULTIPLE- AND SINGLE-ELEMENT FABRICATIONS: PLAITING, NETTING, KNITTING, AND CROCHETING

In this section plaiting, frequently a synonym for weaving in basketry and matwork, signifies braiding, one of the methods of constructing narrow bands and cords. Roth makes a distinction between strand plaiting (1924, p. 99) and "frame looping," best seen in baby slings (ibid., figs. in ch. 20).

The simplest form of plaited strand is the three-strand flat braid. Strands up to a dozen are not rare among archeological and primitive textiles; the number manipulated depends solely upon limits imposed by the device or frame that holds the elements in a vertical or horizontal plane. The eight-strand *Warrau* example pictured by Roth (ibid., fig. 15) is plaited by a method that makes the number of strands inconsequential; ancient Peruvians knew the same method. Whatever the number of elements in a group may be, it is divided into equal sections; consistently the outside left strand is drawn across its half to the center, then the outside right strand is drawn across its half. Regular crossing of these two active strands unites the two sections.

References to braided ropes and cords are numerous: the *Cayapa* make a cord of palm-leaf fiber; braided ropes and strings are scale lines for hammocks and tie-cords in the Guiana area; and plaited grass ropes secure canoes in Tierra del Fuego waters. Various large braided cords that are subdivided to form smaller ones probably originated in the Andean area (Nordenskiöld, 1919 a, p. 130). Braided ropes of llama and alpaca wool and of grasses are abundant in *Inca* graves; many are hard and round, of sufficient strength to tie the mummy bundles into shape, and to tie loads on burden animals. For this last purpose the *Uru* also braid woolen ropes.

Slings also are braided. Among archeological specimens strands of the same sling may be manipulated to first form three-strand flat plaits, then change to eight-strand square plaits or four-strand round plaits, etc. From early Nazca to *Inca* times Peruvian Indians evinced interest in combinations of color and plaiting techniques. *Uru* slings of braided wool have geometric designs like the markings on snakes.

The *Aymara* today make llama and alpaca wool ropes and slings; occasionally, as in ancient times, they braid cord of human hair. In many centers in the Highlands cordage making with the maguey fiber is a thriving native industry.

W. E. Roth's "loop plaiting" with four and five loops (1924, figs. 19, 20) differs from regular flat-strand plaiting in methods of manipulation. The results are three-dimensional cords that furnish excellent clues as to procedures by which the ancients plaited their heavier slings and wool ropes.

Costume and other accessories which are plaited for reasons of strength or appearance are the shoulder lanyards attached to gourds of spear poison (*Carib*); men's belts of a kind of liana (*Arawak*); eight-strand flat fillets (Pilcomayo River); forehead bands and necklaces of bast fibers (*Apinayé*); strings of plaited sinew, fillets, wristlets, and anklets, which are the chief ornaments of the *Ona;* cords for leg bands and human-hair necklaces (*Jívaro*); hair cords from 10 to 15 yards long worn wound around the head, and also wrist and arm guards (*Bororo*); and cords and bands of human hair furnished exclusively by the women (*Chorotí*, *Ashluslay*).

The technique described as "frame looping" (Roth, W. E., 1924, pp. 400–411) is similar to "plaiting of the Tumupasa type" (Nordenskiöld, 1924 a, map 26). Multiple strands are manipulated with the fingers to produce an effect like ordinary plaiting; the material to be plaited is wound around two bars. Scattered tribes from the Guianas to the Chocó plait by the method shown. Some descriptions suggesting the Tumupasa type are reported from the *Chorotí*, *Ashluslay*, *Apinayé*, *Guayakí*, *Chimane*, and *Mosetene*. From Paracas Necropolis graves on the Pisco Peninsula in Perú come long straps or garment ties plaited with from 60 to 148 strands. Some support or frame is indicated by these numbers.

A form of twining technique used for belts in Central America is similar in effect to plaiting. The multiple elements for both must be kept taut between bars and then so regularly manipulated as to form meshes or interlacings. The aids for both techniques are slender sticks used to maintain the crosses made from side to side until successive rows of interlacing secure them. Then the stick farthest away from the worker is withdrawn and reentered at the working edge. (Cf. baby band in Farabee, 1918, pl. 29.) (Pl. 27.)

Plaiting of spun fibers is man's work among the *Sherente* and upper Xingú tribes. *Sherente* men plait baby slings, increasing the size of each successive one as the child grows.

Netted objects other than hammocks are connected chiefly with fishing activities, transportation, and storage; the distribution is wide. Ordinary netting with reef and sheet knots is done both with and without mesh sticks. The *Lengua*, *Ona*, and *Carajá* do not use them; the *Mataco*, *Toba*, *Chiriguano*, *Chané*, *Tapiete*, and *Cayapa* do use them. The *Cayapa* cut lengths of bamboo about 6 inches long; for their heavier set-nets they shape wooden sticks.

Large wooden netting needles on which to wind the cord are occasionally used by the *Carajá.* The *Cayapa* use a single pita length from 10 to 16 feet long to which additional lengths are tied; fingers are the only necessary tools (Barrett, 1925, p. 280). Common materials for nets are tucúm fiber (*Cocama*, *Jívaro*, Napo River *Canelos*, Indians on the Rio Yapura, *Tupí*, *Botocudo*, etc.), caraguatá bast (*Chiriguano*, *Chané*, *Caingang*, *Abipón*, etc.), silk grass or kuraua fiber (*Mosquito*, *Arecuna*, *Wapishana*, etc.), barks of species of *Cecropia* (*Mashacalí*), maguey, and hemp (*Quillacinga*, *Pasto*, *Coaiquer*), guanaco and seal sinew (*Alacaluf*, *Ona*), and rawhide (*Chona*).

Fishing nets of various shapes and sizes from large set-nets (*Cayapa*, *Mosquito*) to the sacklike *Bororo* nets and the women's small dip nets (*Guarayú*) are most frequently described. Nets for hunting are used by *Witotoan* tribes, and bird nets by the *Chiriguano*, *Alacaluf*, and *Ona.*

Netted carrying and storage bags are common; most of them are for transporting foodstuffs; some tribes (*Chiriguano*, *Chané*) store calabashes and pots in net bags. Nordenskiöld (1919 a, pp. 144–146) believes the carrying net to be older than the carrying basket, partly because nets are used in regions with abundant basketry materials. His list of net-using tribes include the *Ge*, *Araucanians*, *Mojo*, and *Guarayú.* Chaco tribes (*Mataco*, *Toba*, *Tapiete*) make net sifters for ground corn although neighboring tribes use basketry forms.

Among netted personal possessions are *Yaruro* slings in which women carry babies or food; the band may be hung from the shoulder or supported like a tumpline. Small bags of excellent workmanship are carried by the *Jívaro*, *Carajá*, and *Mashacalí* for their personal belongings. Caplike head coverings are netted by the *Carajá*, as bases for feathers. The *Chorotí*, *Ashluslay*, *Mataco*, and others decorate hair nets with snail shell beads. The net is cap-shaped with fullness at the sides when the piece has been drawn into shape. Waterproof capes are made by the *Quillacinga*, *Pasto*, and *Coaiquer* by tying leaves or straw to a net foundation.

Dobrizhoffer (1822, vol. 1, p. 90) cites several unusual uses for netted fabrics: if an individual dies away from home, the *Abipón* and *Toba* cover their dead with a net; a widower wears a netted cap until his shorn hair grows out; a woman and girl seen by the author wore netted garments of coarse caraguatá thread which at night served as bedding.

Techniques in net making are demonstrably simple, but their simplicity baffles description because there is no constant element comparable to the warp-weft relationship. A cord of indefinite length is knotted or looped upon itself after being carried around, under, over, or through a previously made unit of the work. Reef knot, sheet bend, coil without foundation (half-hitch), and hitch were accepted terms. Attempts have been made to extend the list (Lehmann, 1907; Nordenskiöld, 1919 a, p. 196; fig. 60; Davidson, 1935). (Fig. 40.)

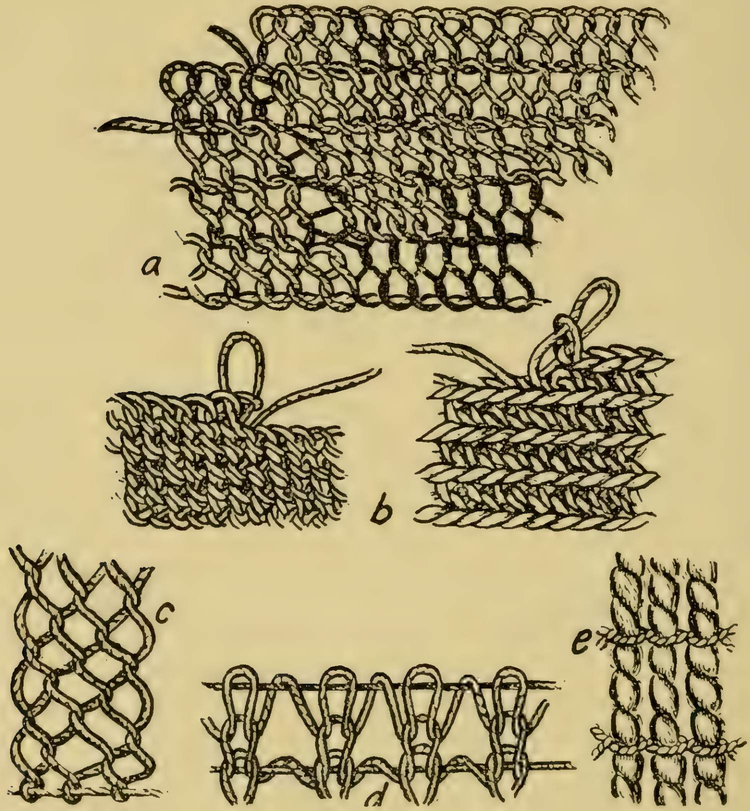


FIGURE 40.—Technique of bags and netting of the Gran Chaco. *a, Mataco; b, Chorotí; c, Ashluslay; d, Mataco; e, Ashluslay.* (After Nordenskiöld, 1919 a, fig. 60.)

Knots used by South American Indians are chiefly reef and sheet knots. The worker begins with a reinforced loop into which he makes a few knots with lags between them; the next row of knots is made on the lags. Widening takes place whenever an extra mesh is added at the ends or between them. Uniform-size meshes are the result of tying knots over a gage or of judging by eye. Net making continues

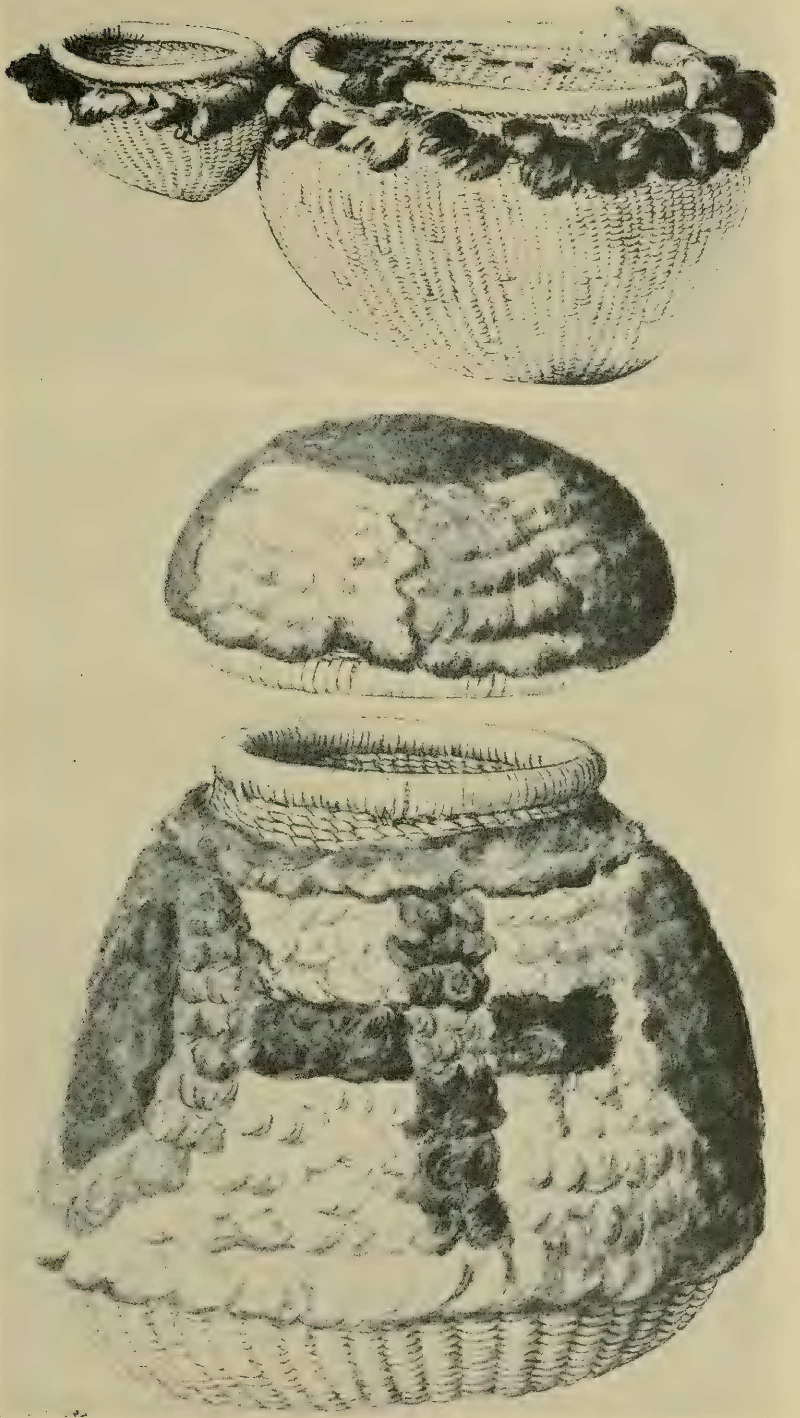


**Plate 17.—Twined baskets from the Lagunas de Huanacoche.** (After Métraux, 1929, pls. 1, 3.)

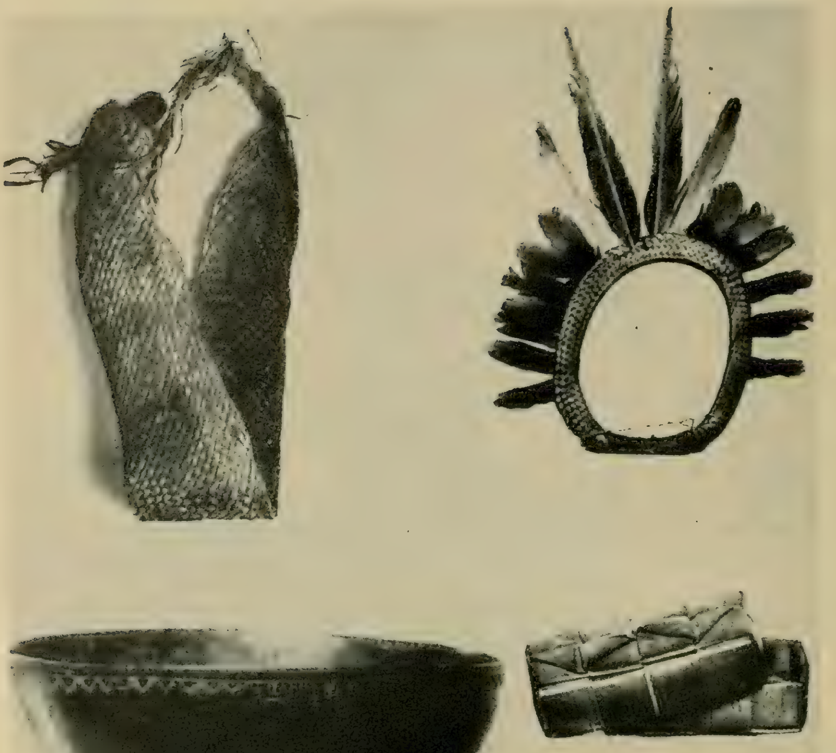


PLATE 18.—**Basketry artifacts of the northwest Amazon.** *Top, left: Witoto* cassava squeezer. *Top, right:* Woven head band with feather decoration, Rio Aiarí. *Bottom, left: Tucano* stand for a calabash bowl. *Bottom, right:* Basketry box for trinkets, Rio Aiarí, and hanging basket for trinkets, *Siusi* and *Cáua.* (*Top, left,* after Whiffen, 1915; others, after Koch-Grünberg, 1909–10, figs. 43, 145, 75, 142.)

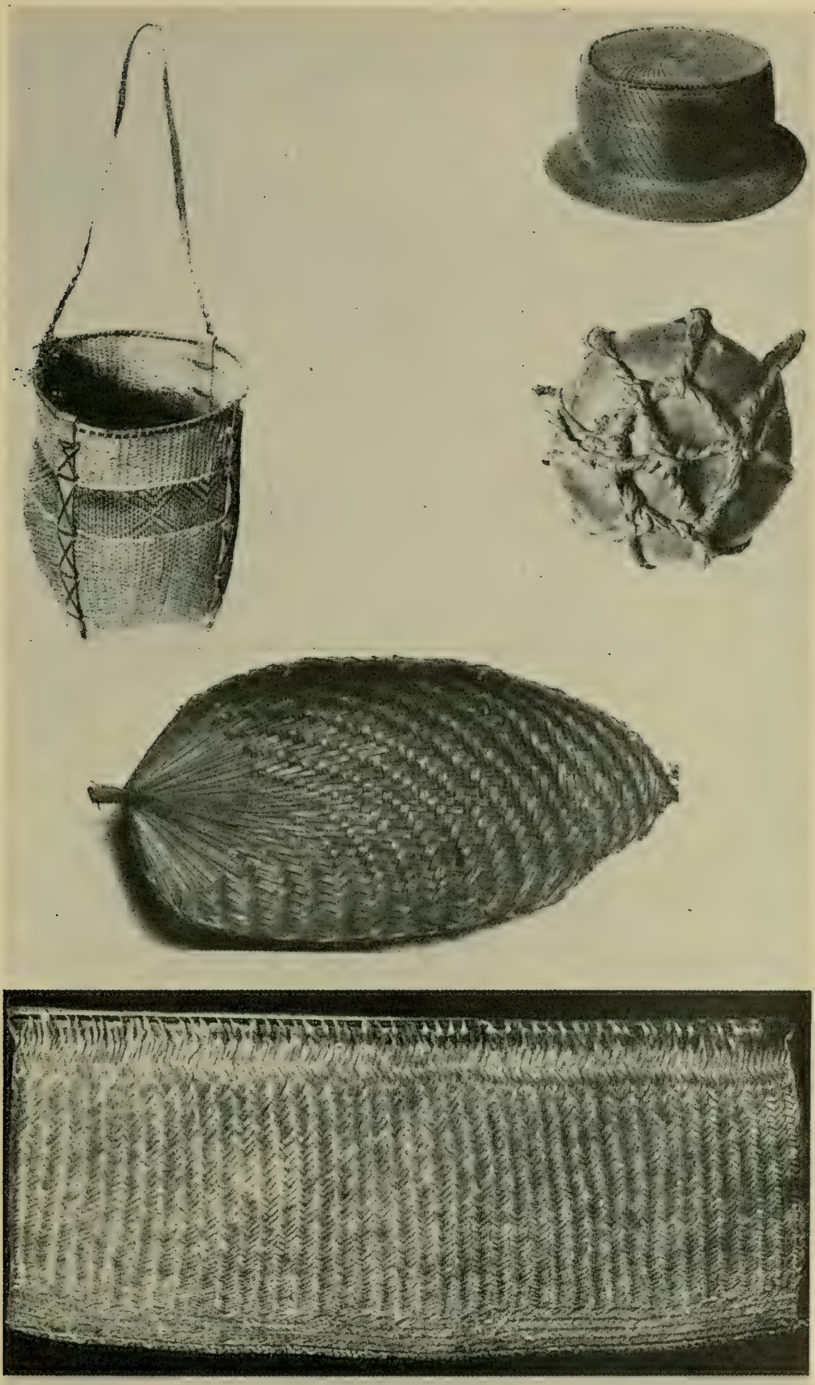


PLATE 19.—**Cainguá, Paressí, and Guató basketry.** *Top, left: Cainguá* basket, *Top, right: Cainguá* hat. *Upper, center: Cainguá* calabash in a suspension net of fiber. *Lower, center: Paressí* fire fan of burití palm. *Bottom: Guató* sleeping mat (1/13 actual size). (After Outes and Bruch, 1910, figs. 78–80; and *lower, center,* and *bottom,* after Max Schmidt, 1913–14 and 1905.)

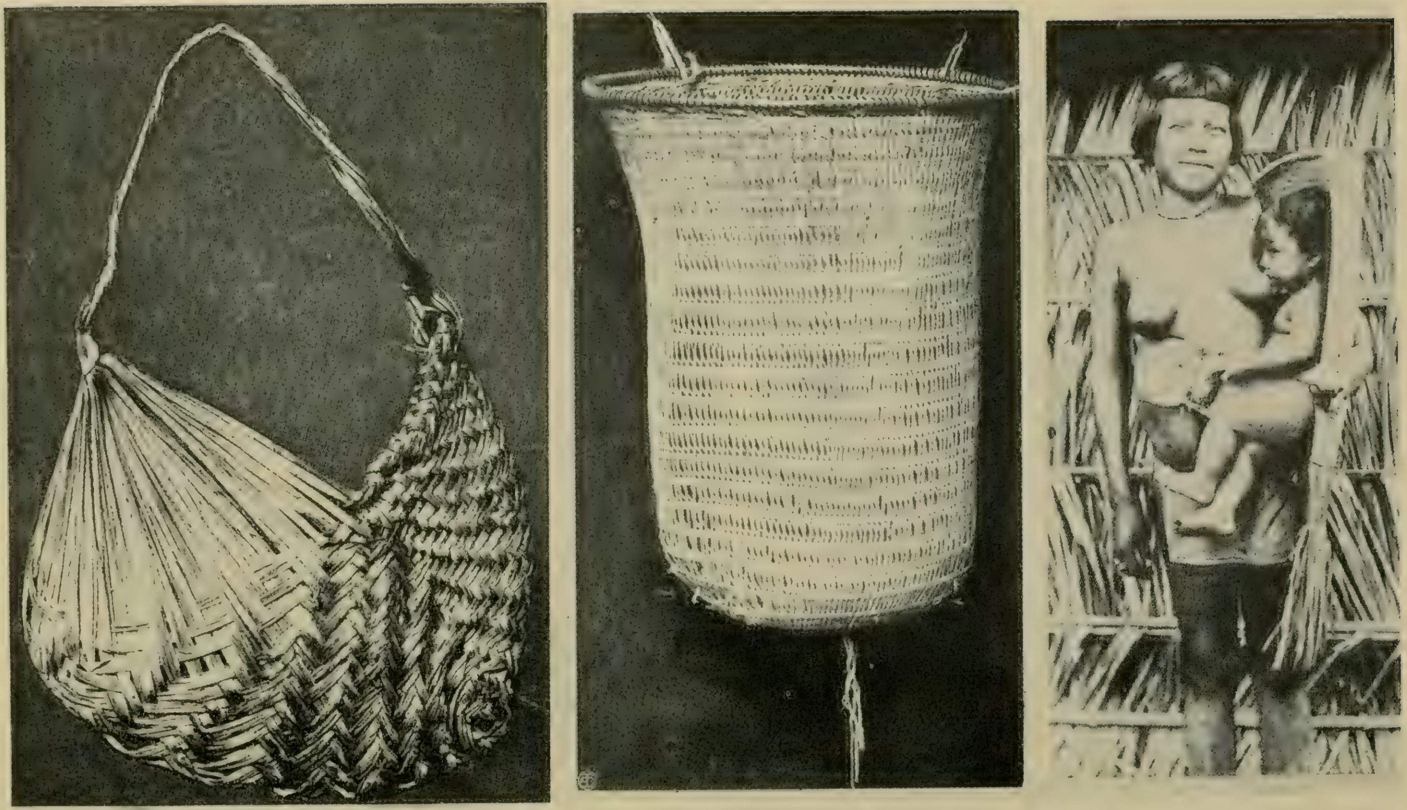


Plate 20.—**Bacaïri, Paressí, and Apinayé basketry.** *Left: Bacaïri* basket from the Rio Novo. *Center: Paressí* carrying basket. *Right: Apinayé* child in basketry carrying girdle and mat. (After Max Schmidt, 1905, fig. 174, and 1913–14, fig. 73; *right*, after Nimuendajú, 1939, fig. 23.)

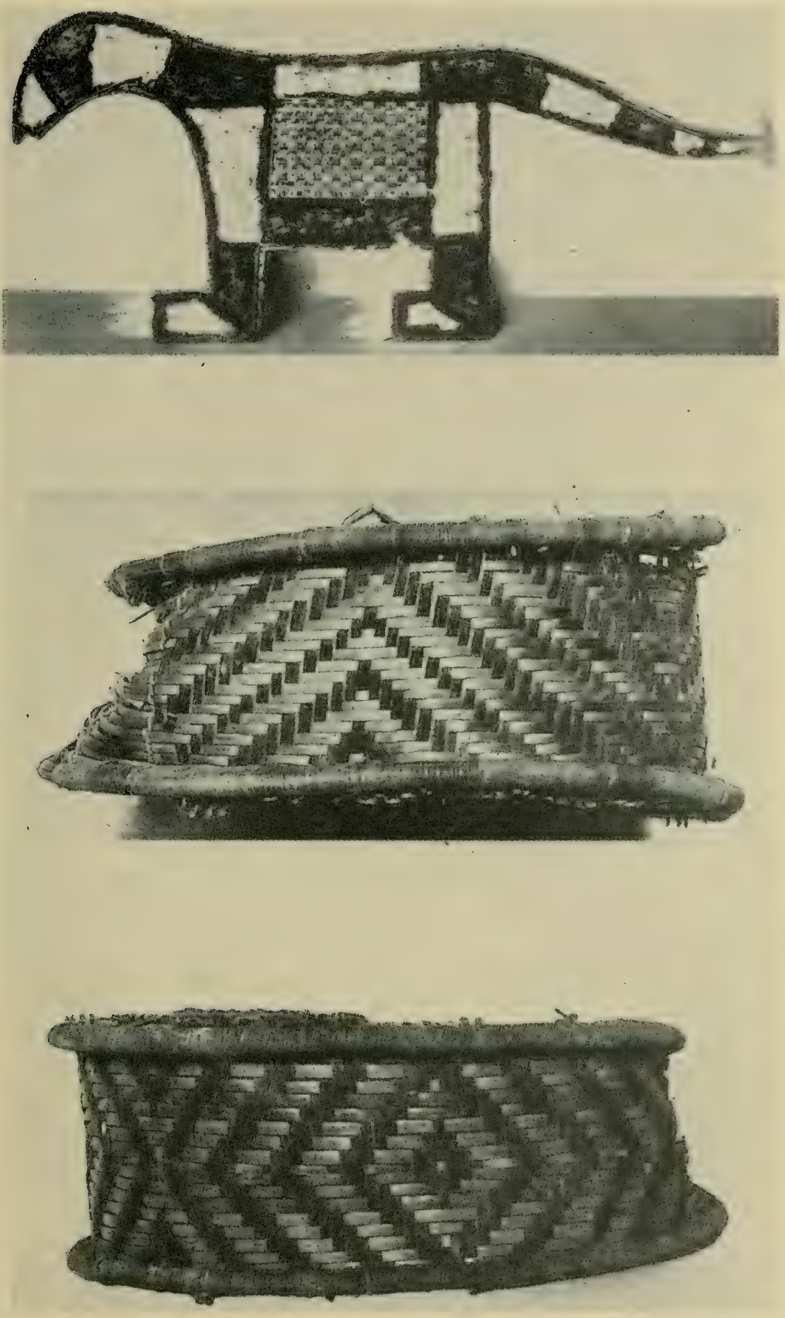


PLATE 21—**Bacaïri and Aparaí basketry manufactures.** *Top: Aparaí* warp frame in form of a jaguar. *Center* and *bottom: Bacaïri* head bands. (After Farabee, 1924, pl. 20; *center* and *bottom*, after Schmidt, 1905, figs. 269, 271.)

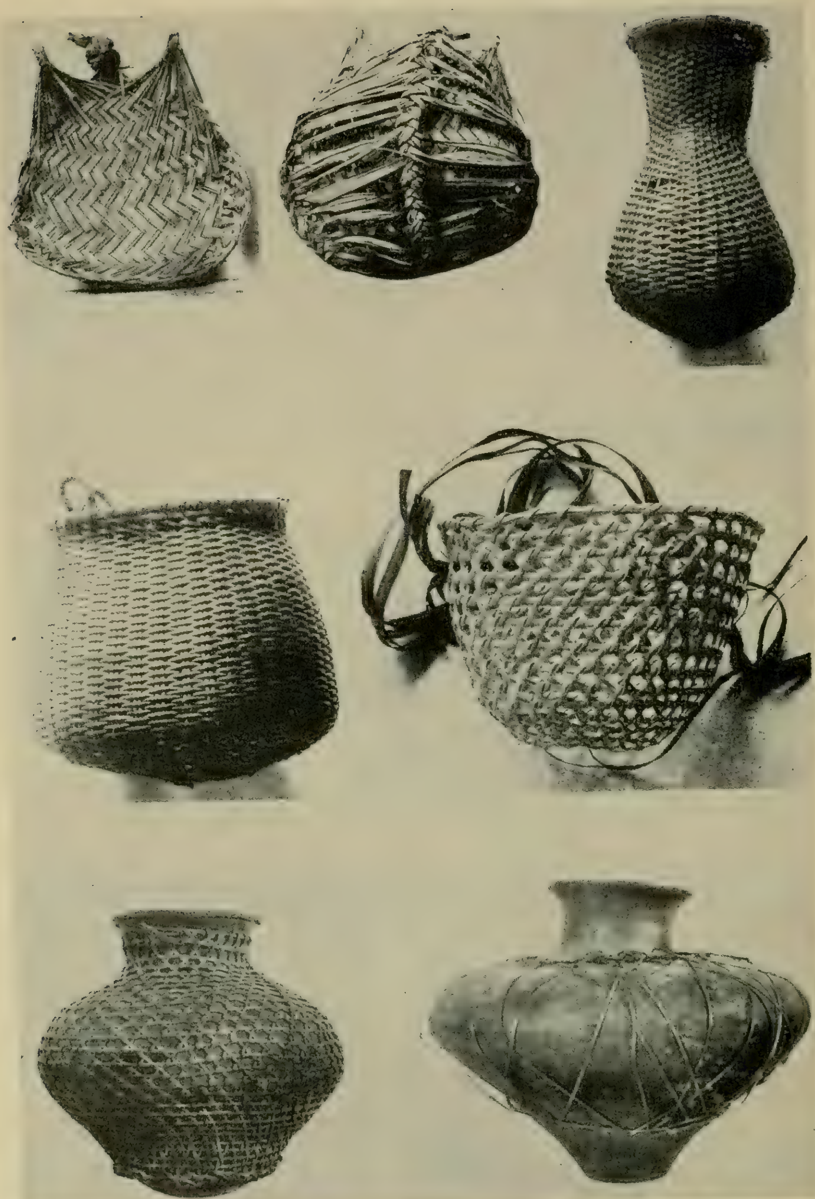


PLATE 22.—**Basketry artifacts of the Guianas.** *Top, left:* Split-leaf ite tray of the *Machushi* and *Wapishana*. *Top, right: Patomona* circular base basket, radiate foundation, warps in two layers at right angles. *Center, left:* Similar *Arawak* basket with warps crossing in pairs. *Center, right: Warrau* circular base basket, diaphragm foundation, loop type. *Bottom:* Hexagonal and loop-mesh basketry covers. (After Roth, W. E., 1924, pls. 121, 104, 107, 21.)

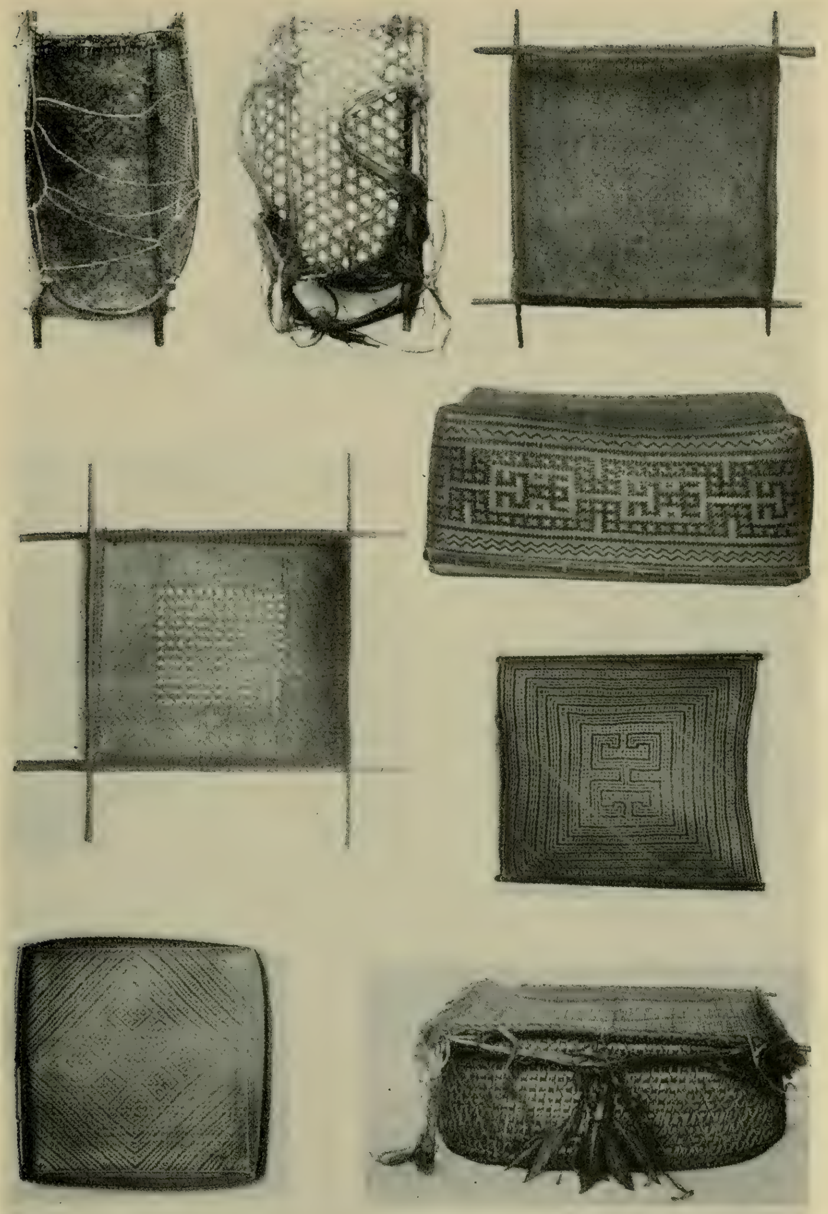
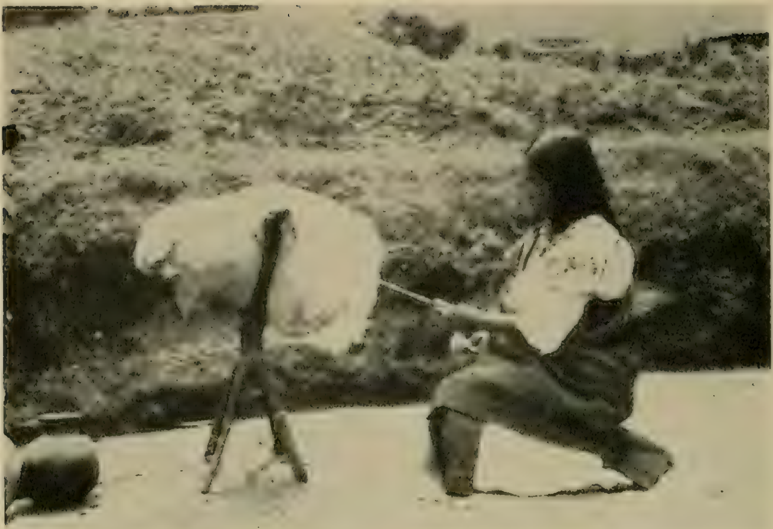


Plate 23.—**Basketry artifacts of the Guianas.** *Top, left: Acawai* and *Patomona* type knapsack. *Top, center: Taulipáng* knapsack, front view. *Top, right: Macushí* cassava sifter with vertical laminated edging. *Center, left:* Farina sifter of type used by *Macushí* and *Wapishana. Center, right, above: Waiwai* storage basket. *Center, right, below,* and *bottom left: Aparaí* trays. *Bottom, right: Waiwai* sieve. (After Roth, W. E., 1924, pls. 118, 72, 71, 34; *center right below,* and *bottom right,* after Farabee, 1924, pl. 23 A.)



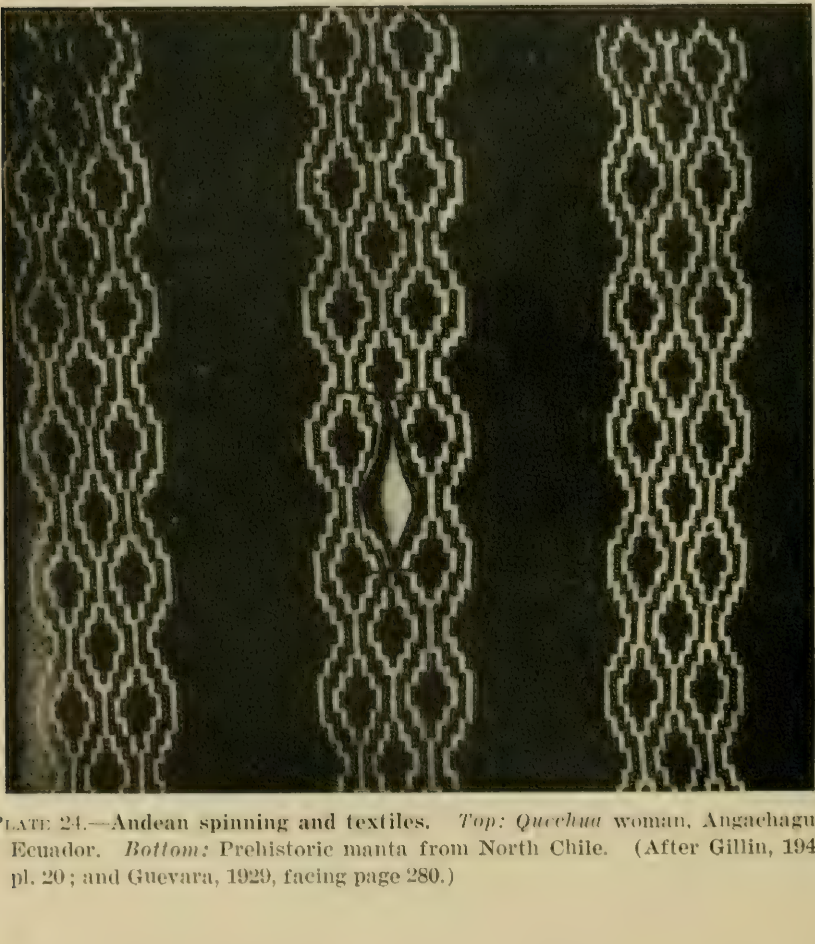


Plate 24.—**Andean spinning and textiles.** *Top: Quechua* woman, Angachagua, Ecuador. *Bottom:* Prehistoric manta from North Chile. (After Gillin, 1941, pl. 20; and Guevara, 1929, facing page 280.)

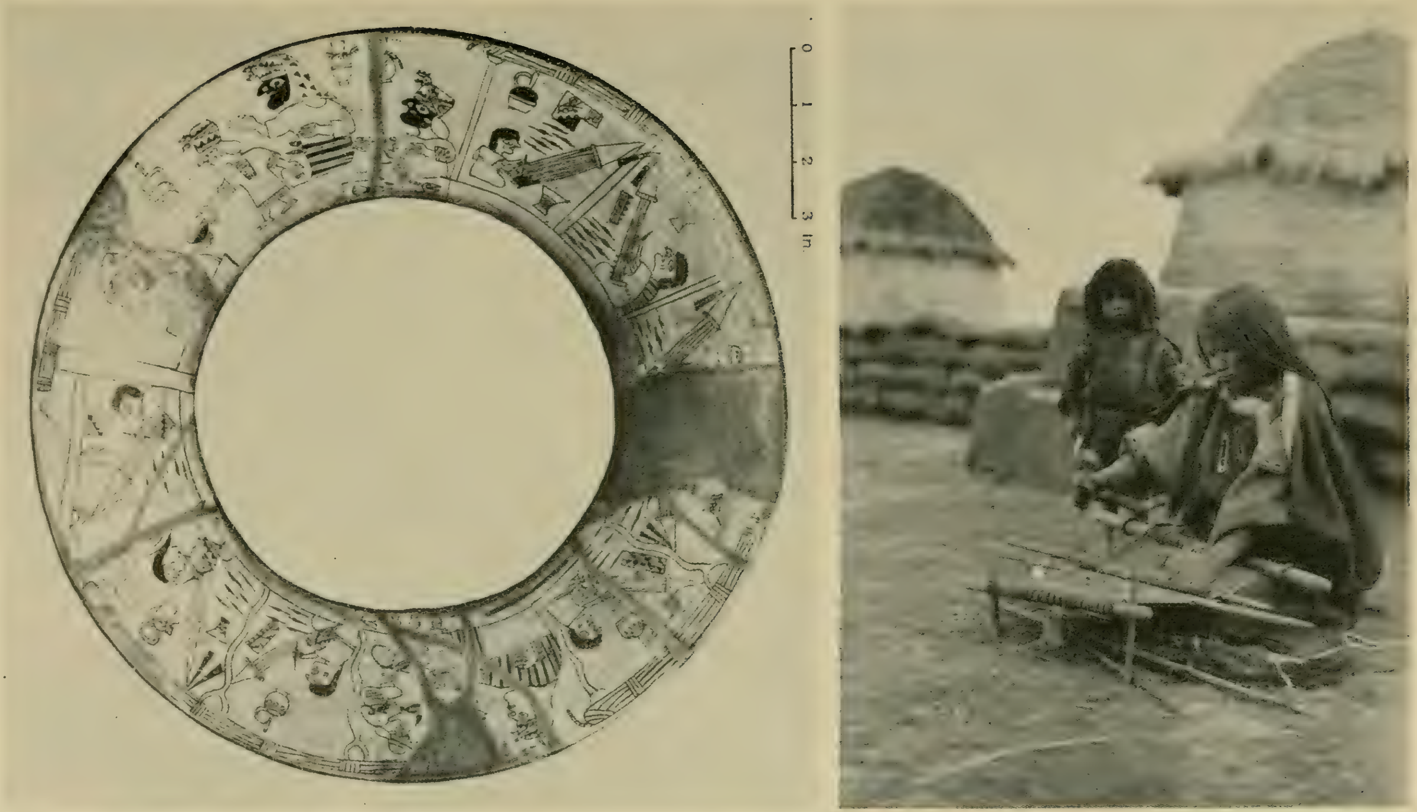


PLATE 25.—**Andean weaving, past and present.** *Left:* Weaving scenes from a pottery vessel of the Mochica culture, North Coast, Perú. *Right:* Modern *Chipaya* woman weaving, Bolivia. (After Joyce, 1921, pl. M; and Métraux, 1935, pl. 16.)

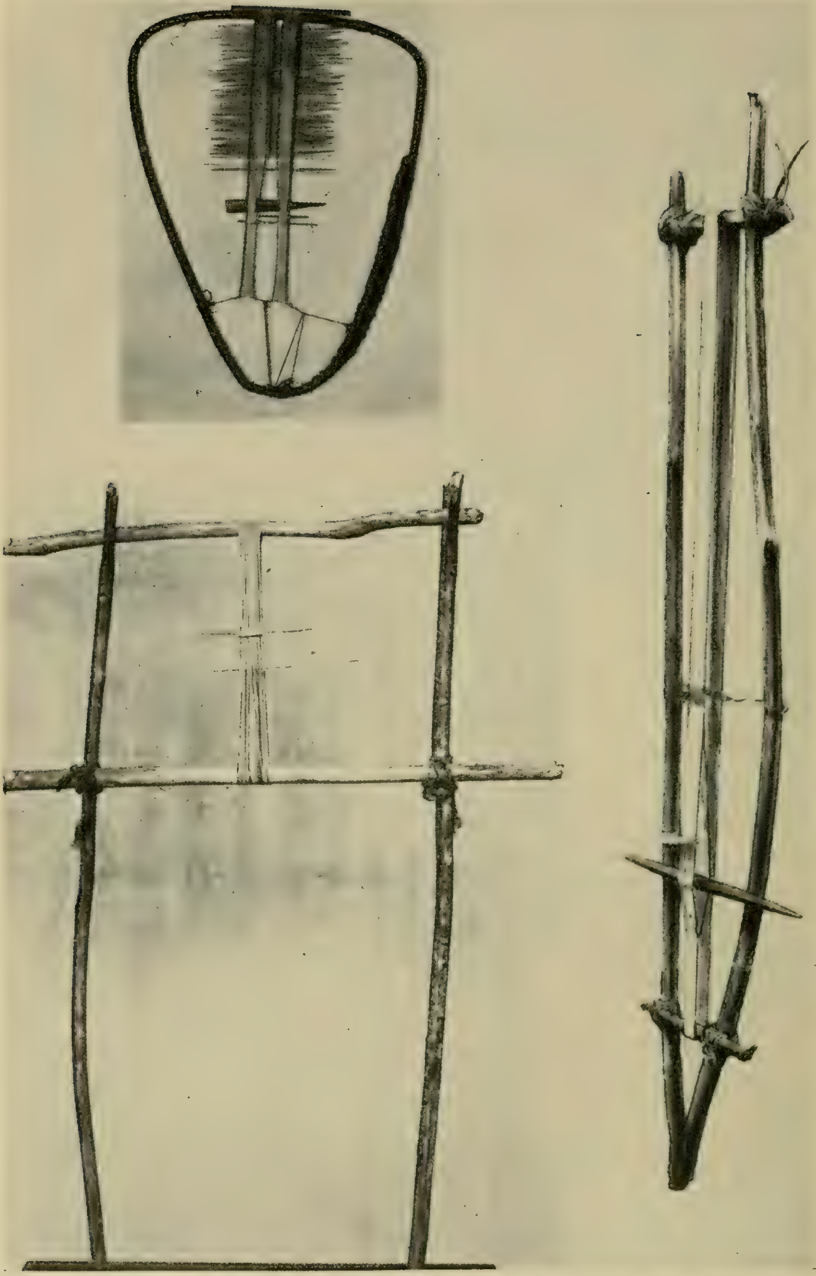


PLATE 26.—**Looms of the forest tribes.** *Top, left: Shipibo* loom for narrow fabrics. *Bottom, left: Paressí* loom. *Right:* band loom of the *Pauserna.* (After Farabee, 1922, pl. 16; Max Schmidt, 1913–14, fig 78; and Nordenskiöld, 1924 a, pl. 30.)

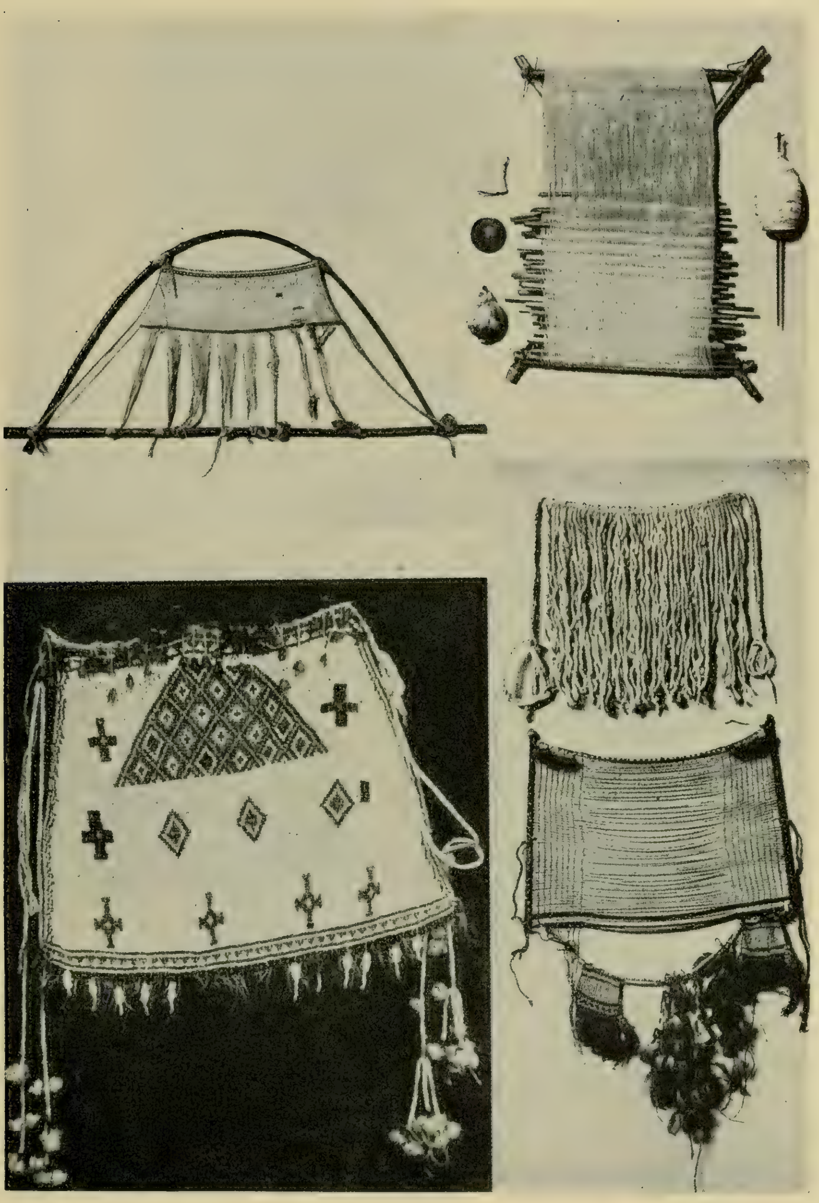
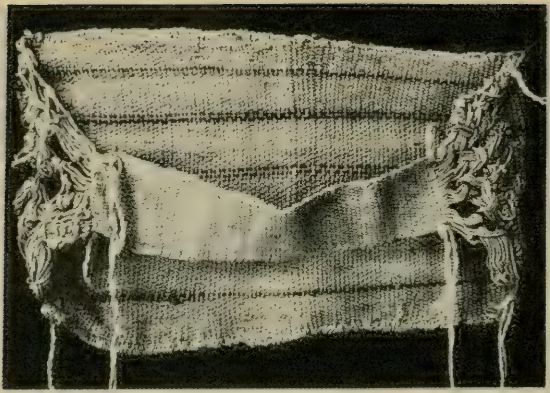


PLATE 27.—**Looms and bead aprons of the Guianas.** *Top, left: Mapidian* bead-apron loom. *Top, right: Mapidian* loom for making baby carrier. *Bottom, left:* Glass bead apron, *Maiongong. Bottom, right:* (Above) *Wapishana* maiden's apron of cotton string, and (below) woman's beaded apron. (*Bottom, left,* after Roth, W. E., 1924, pl. 154; others, after Farabee, 1918, pl. 29.)



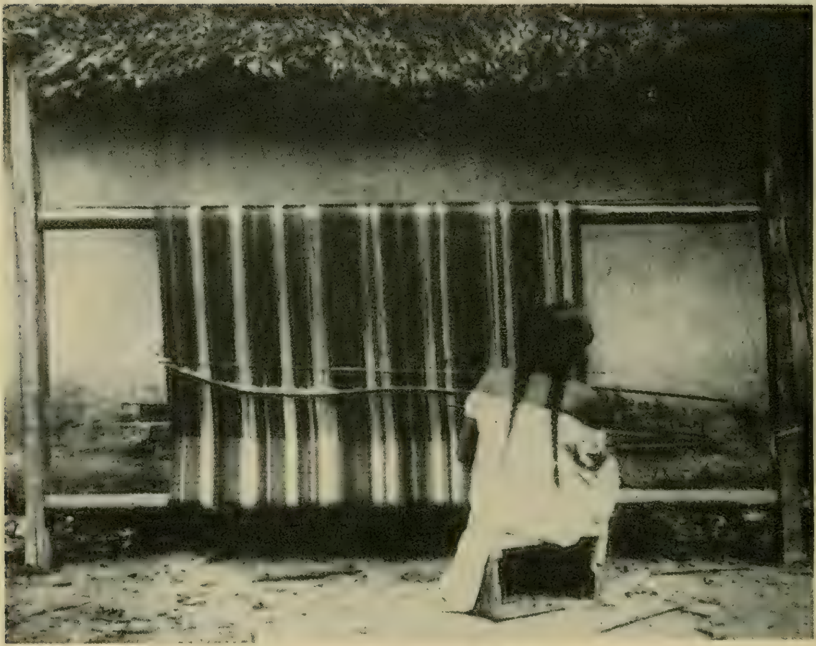


PLATE 28.—**Looms and textiles of the northwest Amazon and Guianas.** *Top:* Baby sling made of two loom-woven cotton bands, *Acawai*, Pomeroon River. *Bottom: Arekena* woman working at vertical loom, Rio Guainía. (After Roth, W. E., 1924, pl. 10; and Koch-Grünberg, 1909–10, fig. 135.)

until the desired size is attained; the *Mataco* make nets 15 to 20 yards long.

Knotless netting has uncounted technical variations. Much of it is done without a tool or with a needle only. The worker begins by making half-hitches or other looping stitches around a circle of cord, or he makes them on a cord held horizontally between two supports (Chaco) or on a horizontal stick which crosses an arched branch stuck in the ground (*Camacan*). The fabric—very loose, as in landing nets, or fine, as in hair nets, or as compact as heavy cloth—is built up by working row upon row of stitches. All three have been found in ancient Peruvian graves.

Nets from some tribes are spoken of with admiration. The *Bororo* are experts, and the *Mataco*, *Toba*, *Chorotí*, and *Ashluslay* work skillfully with caraguatá bast. The variety of netting techniques developed in the Chaco is greater than from any other group of tribes. *Jívaro* net makers begin their quality work by boiling tucúm leaves several hours prior to spinning them. The product is like soft flax.

Decoration of netted objects is accomplished by introducing lengths of dyed cord as stripes (*Botocudo*, Chaco tribes, *Camacan*). *Mataco* bags are admired for their mesh and contrasted color designs in stripes, squares, and triangles. The *Guaymí* attempt more ambitious motifs in half-inch coiled bags (Lothrop, 1937 a, fig. 82). (Fig. 41.) Although the motifs are angular, they avoid appearing static as do the ordinary geometric units.

Both sexes make nets, the division of labor probably depending somewhat upon the size to be constructed. *Cayapa* and *Wapishana* men do the netting; upper Xingú women make fishing and carrying nets, *Apinayé* women knot scoop nets, and in the Chaco women generally are responsible for all such work, at least for the finer caraguatá objects.

Knitting, crocheting, and the like are manipulations of a single continuous strand to form cords, bands, and even fabrics of considerable width. The most detailed technical study has been made by W. E. Roth (1924).

Knitting with needles as Europeans know it is not pre-Columbian; Peruvians of early Nazca times produced quantities of miniature three-dimensional objects in techniques which appear identical to knitting, but the results can and almost certainly were achieved by embroidery techniques (O'Neale, 1934). Larger three-dimensional knitted objects representing men, women, llamas, etc., are sold in Highland markets, but by comparison the attempts are feeble.

Expert women knitters are found among the *Aymara*, *Quechua*, and *Uru-Chipaya*. They all make peaked wool caps with triangular ear flaps, elaborating them with small geometric, animal, and human

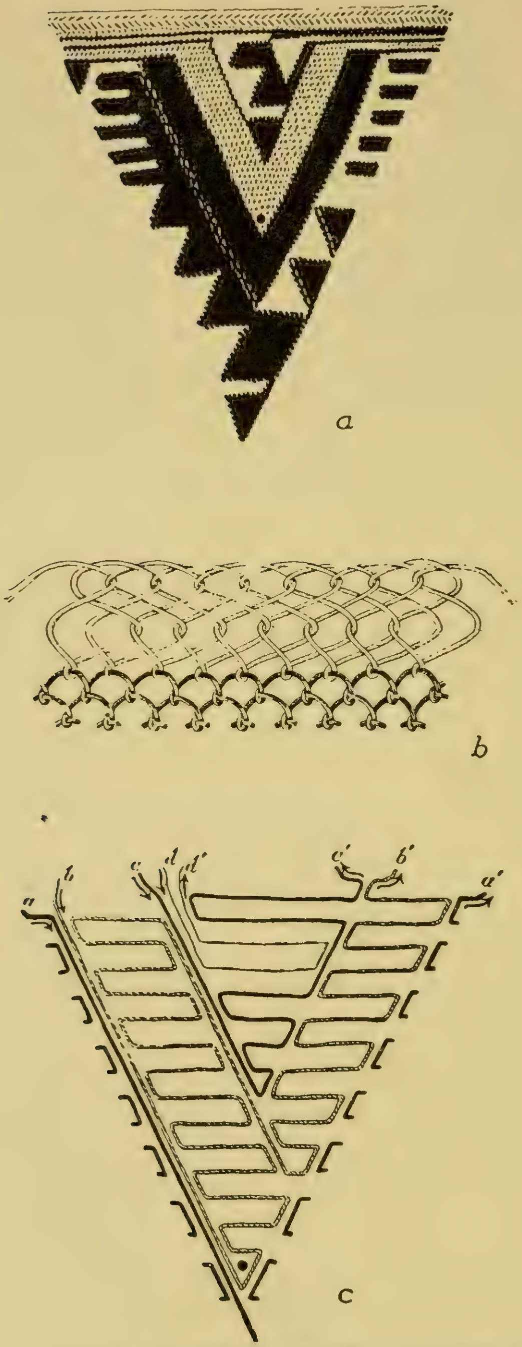


FIGURE 41.—Weave details of modern *Guaymi* bag. (Compare black dot in *a* and *c* with fig. 39.) *a*, Design element; *b*, selvage; *c*, analysis of fig. 4. (After Lothrop, 1937 a, fig. 82.)

designs; the *Uru* also knit caps, mittens, and socks from yarn spun from the down of lake birds. Knitted caps worn by *Ashluslay* men are occasionally decorated with mussel-shell spangles.

Cotton cord knitted by *Carib* and *Macushí* women makes the belt supporting the man's breechcloth. Needles, in orthodox knitting, are freely withdrawn from the work as it progresses and subsequently reinserted. *Acawaí* procedure illustrated by W. E. Roth (1924, p. 107; pl. 10) shows two needles tied at one extremity as a kind of gage for loops made by the fingers (pl. 28). Among Guiana tribes, men and women wear woven and "knitted" arm, wrist, knee, and ankle bands. Large and small carrying and storage bags are knitted of caraguatá fiber by *Chorotí*, *Ashluslay*, *Mataco*, *Tapiete*, *Toba*, and others. In the Apáporis River district, women "knit" the men's small carrying pockets of tucúm fiber over a bent V-shaped frame with three needles (Koch-Grünberg, 1909–10, 2:289).

Crocheting as done by Europeans requires one needle; as described by W. E. Roth (1924, pp. 105–107) it may also be a two-needle technique. The *Carajá*, *Carib*, and *Macushí* use one hooked needle to make anklets and armlets on the limb itself or around a shaped block of wood; the *Warrau* use two needles, a passive one to hold the completed loops (stitches) and an active one to form new loops on itself. Then the passive needle is withdrawn to become active. Wide crocheted foot rings are sewn up to make bags (*Macushí*, *Patamona*); narrow cotton belts in appearance like crocheted fabrics are constructed over a device formed by binding together two small reeds (*Bororo*); woolen bags described as a kind of crocheting appear to be made by finger-looping methods (*Quillacinga*, *Pasto*, *Coaiquer*).

Where mention is made of the worker, knitting (*Aymara*, *Ararandeuara*) and crocheting (*Wapishana*, upper Xingú tribes) are the tasks of women.

Ingenious techniques have been worked out on small sticks as foundations and gages. The *Wapishana* wear narrow bands made on pliable sticks; Im Thurn speaks of close, compact fillets made on several sticks like knitting needles; and W. E. Roth (1924, pl. 10, fig. 23) illustrates a *Patamona* band made on "six rounded split-eyed needles." Some of these results deserve to be tagged with their native names since they are as distinctive as batik and ikat.

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# CERAMICS

By Gordon R. Willey

## INTRODUCTION

The aims of this study are to set down in a relatively brief discussion the descriptive, functional, developmental, and historical highlights of South American ceramics. Except for the southern tip of South America and the northwestern extremity of the West Indies, native pottery probably was, and in some places still is, made throughout the continent. For a Handbook summary, the importance of pottery is two-fold. First, in terms of ethnological survey, pottery is one of the principal native crafts and is practiced by many tribes; second, in the historical and archeological sense pottery has assumed a significance out of all proportion to its place in Indian cultures. It has, in effect, become the chief tool of archeological reconstruction. This is accidental and does not reflect the cultural importance of pottery to the people who made it; nevertheless, because pottery has assumed this prime role in historical studies it deserves a different and more detailed treatment than would otherwise be accorded to it.

In attempting a survey of both ethnographical and archeological ceramic data for all of South America, I have tried to present in compressed fashion, enough solid, descriptive material so that the study will not be meaningless. At the same time, I have also ventured to set forth a number of developmental and historical formulations which, I think, are justified in light of the broader outlines that are now beginning to emerge. Insomuch as these formulations are speculative, I accept responsibility for them. There are certain admissions, however, which should be made at the beginning. In the case of the maps, boundary lines and the location of centers of origin are very approximate. In general, I feel that they are correct, but I hold no claim for specific accuracy. Also, throughout, I have relied more heavily upon archeological data than upon ethnographical material. This is because there are usually more data on ceramics in archeological than in ethnographical accounts, and because archeological reports treat a range of time much greater than that covered in most ethnographical studies.

In presentation, I have begun by summarizing the ceramic technology in South America and the function of ceramics in South American cultures as these are known or inferred. The next main section is an analysis of the evolution of South American pottery, which has several historical implications. This is followed by an area by area descriptive summary of the major South American pottery styles and their temporal and spatial relationships to each other. A final section discusses the hypothetical evolutionary sequence of pottery development and compares this sequence with specific historical sequences in the different pottery areas. The same section closes with an evaluation of pottery and culture.

## SOURCES

In preparation, I did not review all of the original archeological and ethnographical literature on South American ceramics. Such an exhaustive task would involve several years' work and this research, at its conclusion, would merit more than a brief summary paper. I did, however, have the advantage of examining all of the articles in the previous four volumes of the Handbook of South American Indians. As each of these regional studies was the result of an intensive study of existing literature upon a particular area or tribe, my survey is, in a sense, a survey of surveys. In a number of instances, recourse was made to original sources, particularly some of the more important archeological monographs. I have not quoted these, except with reference to very specific points, as they are all listed in the respective bibliographies appended to each of the regional articles in the other four volumes of the Handbook. I wish, however, to call special attention to the works of Linné (1925, 1929, 1934) on South American ceramics. These references are practically the only ones that deal with ceramics as such. In particular, Linné's "Technique of South American Ceramics" (1925) is the basis for my section on Generalizations, Technological and Functional.

I should like, also, to mention the assistance I have received from anthropological colleagues. Dr. Julian H. Steward, editor of the Handbook, not only performed his usual editorial functions with regard to my paper, but gave it the benefit of special attention and criticism. Dr. Irving Rouse and Dr. George Howard, of the Department of Anthropology, Yale University, read the manuscript and gave valuable criticism, especially with regard to the Tropical Forest and West Indian regions. A number of these criticisms have resulted in some changes in this summary. It should be made clear, however, that the text as it stands does not entirely coincide with the views of either of these men. In particular, Rouse's interpretation of ceramic history in the West Indies differs from that given here, and Rouse

plans, shortly, to publish his opinions in a summary work on the archeology of Puerto Rico (Rouse, 1949).

## GENERALIZATIONS

### TECHNOLOGICAL

**Methods.**—Throughout lowland South America, it is generally customary for pottery to be made by the women of a tribe. It is supposed that in the more advanced cultures of the prehistoric Andes men were the potters. The professional quality of some of the Peruvian wares suggests that pottery making and decorating was a special craft rather than an occupation engaged in by the community as a whole.

Direct molding or shaping is often considered as the simplest and least advanced method of pottery manufacture. In this process, the vessel is shaped directly from the lump of wet clay. Sometimes a stone or another vessel is used as a base for the shaping. The historic tribes living on the upper Xingú River, in the Chaco, and in Rio Grande do Sul are known to have used only this direct molding method.

Coiling is a widespread method of pottery manufacture in South America. Coiling is accomplished by spiraling the ropes of wet clay or by affixing a separate annular ring of clay on top of the one below it. Sometimes coiling is combined with direct molding, as when the walls of the vessel are coiled upon the top of a molded base. Coiling is said to be the most common method of pottery making throughout the Andes, in Caribbean South America, in the Chaco, in the southern part of the continent, and in the Amazon Basin; but as information on processes of pottery manufacture are generally lacking for South America, it is certainly much too broad a statement to say that all of the pottery, both prehistoric and historic, from the areas enumerated was coiled. I have examined large archeological collections of both sherds and vessels from the Central Coast of Perú, and in much of this material there was no evidence of coiling fractures. Nor was this particular pottery formed in prepared molds.

No thorough studies of Peruvian archeological pottery have ever been made with this problem of ceramic construction types in mind, and until such studies are carried out in Perú and elsewhere in South America no definitive statements can be made about the spatial and temporal distributions of the different techniques used in pottery manufacture. In this connection, the point should be made that the direct molding principle, although possibly the first method of vessel construction devised, is not necessarily always associated with crude or simple pottery. Although the method was retained in historic times by the more backward tribes of South America, direct molding may at one time have been not only more widely used but also used to produce very superior ceramics.[1]

Basket construction of pottery was practiced in several small, scattered areas of South America. In this method, the vessel was built up inside a woven basketry container. Pottery of this type is recorded for the highlands of Córdoba and surrounding country of Northwest Argentina, for interior Venezuela, and for the Bolivian lowlands.

The most advanced manufacturing technique for ceramics is the use of prepared molds. Molds are used for two different types of ceramic products: (1) small, solid, decorative adornos or figurines, and (2) complete vessels. Evidences of the first type are common in Central America and down the west coast of South America to northern Perú (pl. 37, *b*) those of the second type are found mainly on the North and Central Coasts of Perú. In Perú mold-made ceramics date from the early Chavín Period (estimated at A. D. 0–500) while in northern Central America, near the *Maya* frontier, they are dated as of the late "Old Empire" (A. D. 700–1000). In the intermediate regions no such estimates can be made, but apparently nowhere in South America is mold-made ware as early as in North Coastal Perú.

Larco Hoyle (Handbook, vol. 2, p. 166) describes the process of mold-made vessels as follows. A clay model of the body of the vessel was made first and fired. The molds were made over this model, and then were cut vertically, giving an obverse and a reverse face. From these negative casts the two positive halves were produced, and these were then conjoined to form the vessel. Spout, base, and additional features were made and added separately. This description is based upon archeological data (models, molds, etc.) found in Mochica (Early Chimu) Period graves of the North Coast of Perú.

Prefired surfacing consisted of scraping and smoothing to obliterate the coils, in the case of coiled pots, and pebble polishing after air-drying to give a smooth, nonporous surface.

Firing was either in the open or in kilns or ovens. Open-firing produced smoke-smudged, brownish, black, or mottled-buff vessels. The control of oxidization tended to be uneven and haphazard. For the most part, open-firing was and is characteristic of the eastern lowlands and southern South America. Kiln firing is typical of the Andean regions. Kilns with a strong draught, produced by openings at both bottom and top, fired pottery to a well-oxidized red. Kilns with a low admission of air, producing a slow combustion, fired pottery to a grey or dead black. Black pottery was common to Perú, particularly the North Coast, where it is most characteristic of the Late Chimu Period.

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[1] That the direct molding method can be used in making fine native American pottery is attested to by the fact that some of the best modern Mexican (Chiapas) wares are manufactured in this way.

Black ware, or "bucchero," is also found in Nicaragua, Panamá, northern Colombia, Ecuador, Southern Perú, and the South Andes.

The use of a slip is a technological advance which improves the evenness of the vessel finish and renders the ware less permeable to water. Slipped pottery is found all down the Andean belt, in the Circum-Caribbean area, in many parts of the Amazon drainage, down the Brazilian coast, and on the Paraná River. It is chiefly lacking from the southern part of South America, much of the Chaco, the interior of eastern Brazil, parts of the Montaña, and probably parts of the interior of Venezuela and the Guianas.

Wax coating of the vessel is solely an Amazonian trait. Resin varnishing, for appearance and impermeability, is more widespread but centers in the Amazon drainage and the Guianas. It does not occur in the Andes or in Central America. One minor exception to the foregoing are occurrences of varnishing in Colombia, probably attributable to a Tropical Forest infiltration. Painting will be discussed in greater detail under Ornamentation. In general, mineral pigments are more common to the Andes; vegetal pigments to the lowlands.

**Materials.**—Suitable clay is a necessity in the manufacture of pottery. In some regions, such as the western slopes of the Andes in Perú, such clays were abundant; in other areas clays were less well adapted to ceramic manufacture. Clays were prepared by pulverization while dry or kneading while wet. Their fineness of grain had a direct relationship to the fineness or coarseness of the finished ware.

Sand temper and fine grit are the most widespread aplastics, being found in all parts of the continent except the Amazonian Basin and the Guianas. These tempering materials were utilized in making the very best South American pottery as well as the more primitive wares. Sherd temper (crushed potsherds) is usually employed where sand is geologically scarce or absent. It is reported from the Province of Mojos, the Chaco, the region of the *Chiriguano*, Marajó Island, and Puerto Rico.

Probably the commonest aplastic in the Tropical Forest is ash from the siliceous bark of the caraipe tree. Pottery with this temper is found throughout the Amazon and Orinoco drainages. Most authorities have seen an historical connection between the *Arawakan*-speaking tribes and the siliceous-ash temper type. The correlation holds except that the *Arawakans* of the extreme south (Paraguay) and north (West Indies) did not possess the trait. Most likely, whatever the ethnic affiliations, ash temper was first developed on the lower Amazon. It is, incidentally, significant, in terms of environment, that it is a forest and not an Andean development.

Another apparent Amazonian development in pottery temper is the use of ground sponges as an aplastic. Temper of this sort has been identified from the Río Guaporé, the Orinoco, the Santarem district, and the *Carajá* and *Canichana* tribes. Presumably, it also is lower Amazonian in origin.

Crushed-shell temper for pottery is found in the small islands of Aruba, and Margarita. Linné (1925) suggests that it might be due to North American influence. This is a possibility, but shell-tempered pottery in the Southeastern United States belongs only to the late prehistoric and early Contact periods in that area, greatly narrowing the time interval for its possible diffusion into the prehistoric cultures of the West Indies and the islands of the Caribbean.

Bone ash as a temper in ceramics is reported only for the *Toba* of the Chaco. There is a single instance where vegetal fibers are listed as an aplastic. This is in the simple plain and incised wares of Buenos Aires Province, Argentina.

This brief summarization of temper types is not only very general but extremely sketchy. The pottery of many regions has never been examined with such a study in mind. As with methods of manufacture, the problems of materials used in South American pottery making have not been systematically or thoroughly investigated.

**Forms.**—The simple forms, usually open or subglobular bowls, are found in virtually all parts of South America where pottery occurs and in all time levels. In the Central Andean sequences these simple forms are present, to the near-exclusion of other shapes, in the very earliest ceramic periods. Distributionally, the simple forms are most common in the Argentine Pampas and Patagonia and in the more remote interior areas of the Tropical Forest and Gran Chaco. The big but relatively simple water or maize-beer storage jars are also widespread, but they are scarce or absent in the far south and typical for the Tropical Forest regions. In general, collared bowls, jars, ollas, bowls or jars of compound form, and shallow dishes are found in almost all quarters except some of the interior forest refuge areas and the south.

More specialized vessel forms have relatively limited distributions. Narrow-spouted forms are very characteristic of the Central Andean area where they begin in the early periods and continue through to historic times; but they are not so typical of other areas. These spouted forms include the double-spout with bridge handle (pl. 30, *e*), stirrup-spout (pls. 29, *d;* 31, *d*), and spouts with one or two round or ribbon handles attached (pl. 31, *a*). The last named is often found outside of the Central Andean area; the other two occur in the north Andean region but they are not common there. Double jars of the small-spouted variety (pl. 32, *b*) are abundant in Perú. The double vessel also occurs in the North Andean and, occasionally, in the South Andean area. Quite often the double jar is associated with a whistling device in the small air-intake.

Special based or footed vessels have the following distributions:

Annular bases (pl. 39, *d*) seem to center in Colombia and Ecuador, where they occur in several variations, including the tall pedestaled compoteras (pl. 40, *c*). They are also numerous in Central America, but to the south of Ecuador they are not so common except for the *Inca* Period. The annular base in one form or another is also reported for Venezuela, the Lesser Antilles, Puerto Rico, the Brazilian Guianas, eastern Bolivia, and scattered stations throughout the Amazon drainage. Tripods (pl. 35, *f*) have two centers of intensity, Central America and Ecuador. Intermediately, in Colombia, they are scarce although they seem to have spread over into the Venezuelan Andes. Tripods are also found in Northern Perú, a presumed extension of the Ecuadoran distribution, in the Province of Mojos of eastern Bolivia, very sparsely in the South Andes, and at a few places in the Amazon drainage. In the Andes and in Central America both the annular base and the tripod have an early inception wherever sequences are known.

Tetrapodal supports (fig. 52, *right*) are much less frequent than tripods or annular bases. For South America they are recorded from the earliest horizon in the Velarde Mound, Mojos region of Bolivia; from the Andean section of Venezuela; from Puerto Rico; and from the earliest ceramic periods in Central America.

Flat griddles have a wholly Tropical Forest distribution. They occur in southern Panamá, the West Indies, on the Orinoco and Amazonian drainages, and along the Guiana and northeast Brazilian coasts.

Lids for pottery vessels occur sporadically. They appear in Central America, throughout the *Inca* Empire, where they are clearly associated only with this late horizon, and again at the mouth of the Amazon.

Handles and lugs for vessels are widely distributed. They are found associated with virtually all pottery styles except the simpler wares of the interior forests, southern Argentina, and some few other places.

Burial urns (pl. 36, *c*), often anthropomorphized in relief, are primarily an eastern South American feature. They occur at the mouth of the Amazon, on the middle Amazon, on the Brazilian northeast coast, in the Mojos district, in Venezuela, down the Paraná drainage in the south, and in Northwest Argentina. In all of these places, they are typical of the archeology. In the Andean area a few burial urns have been reported, but the trait is not characteristic of western South America.

Effigy vessel forms are distinguished from effigy adornos or adornment in that the body of the vessel is modified to resemble some life or earth form (pl. 31, *b*). The high point of effigy forms was reached in northern Perú in the major Early Period of the Central Andean area; however, both earlier and later effigies were common in the north Peruvian area. Peruvian vessels were modeled to resemble any of an exhaustive list of subjects, including animals, humans, fruits and plants, various life scenes, fantasy scenes, and earth forms such as mountains, rocks, etc. In some of the more complicated of these, small adorno modeling was often combined with true effigy-vessel modeling. Effigy vessels are found in the North Andean area, and they are often represented as hollow clay men seated upon small benches (pl. 39, *c*). Effigies were also made in Central America, Venezuela, the northeast Brazilian coast, and, occasionally, in the South Andean area.

There are a great many ceramic forms other than containers in South America. Outstanding among these are flat (pl. 37, *d*) and cylindrical (pl. 37, *a*) stamps, figurines both solid and hollow, whistles, panpipes (pl. 37, *e*), whorls, pipes, and incensarios. The plane or flat pottery stamps are presumed to have a greater antiquity than the cylindrical or roller stamps (Linné, 1929). Flat stamps of pottery are found in Central America, Colombia, Ecuador, or the Orinoco, and in the West Indies. The cylindrical stamps have a somewhat similar distribution although they are not common in the West Indies. Figurines are widespread. Hand-made figurines appear to be earlier than mold-made figurines; and the former appear in Central America, down the Andean chain to Northwest Argentina, in the Amazon drainage, in eastern Bolivia, and Venezuela. Mold-made figurines have a more restricted distribution. In North Perú and Ecuador this distribution corresponds to that of mold-made pottery vessels. North Peruvian mold-made figurines appear quite early in the sequence. Mold-made figurines are again found in Central America, where they appear in the middle and late levels. Pottery whistles are Andean and Central American, and they are extremely plentiful in Central America. Panpipes are Andean, particularly in the Central and South Andes. Occurences of this instrument in the forest montaña are in nonceramic materials. Pottery spindle whorls are found all along the Andean chain and extend up into Central America. Smoking pipes are, curiously, South Andean and southern South American on the one hand, and North Andean and Venezuelan on the other. They do not appear in the central Andean area. Incensarios are typically Central American.

**Ornamentation.**—Most South American pottery is decorated, or rather, there is some decorated pottery from almost all South American archeological regions during almost all periods. Actually, there seems always to have been a great deal of undecorated pottery in association with decorated in all areas and periods where decorated pottery occurred. Only in the huge interior area of eastern Brazil, south of the Amazon, is there no decorated pottery. Throughout the remainder of South America some ornamented pottery was made at one or more periods during the past or is made at present.

There are two basic types of ceramic decoration, plastic and painted treatment. Plastic treatment includes all those techniques of ornamentation that involve manipulation of the soft, unfired surfaces of the vessel or ceramic object. Painting is the application of pigments to the vessel surfaces and the fixing of these pigments by the subsequent firing process or processes.

Painting has often been considered a more advanced type of pottery decoration than plastic treatment, but the development of ceramic decoration, at least in South America, cannot be recapitulated that simply. Plastic wares do not always precede painted wares. It is true that a consideration of the evidence leads to the conclusion that the first South American pottery decoration was of a simple plastic sort, but following this, simple painted wares appear, and from this point on in the history of South American pottery the growing complexity in ceramic ornamentation was characterized by both plastic and painted techniques. Only to a limited extent was one technique used to the exclusion of the other. Many of the finest examples of South American pottery, from the standpoint of complexity, esthetic value, and the time and care expended upon the object, combined both painting and plastic adornment. Usually, however, in any pottery style, and even in a pottery area, one technique was dominant and emphasized at the expense of the other.

Plastic treatment of one kind or another is found in virtually all parts of South America in which there is decorated pottery. It has a wider distribution than painted treatment; and in southern South America, the Greater Antilles, on the Orinoco, at some places on the Amazon, in northern Colombia, and in lower Central America incised, filleted, and modeled styles greatly outnumber the painted ones.

Opposed to this distribution are those areas where painting is the emphasized technique. This is the case for southern Perú, the Bolivian Highlands, Northern Chile, Northwest Argentina, large parts of the Amazon system, and upper Central America.

In a somewhat intermediate position are the regions of southern Colombia, Ecuador, Northern Perú, western Venezuela, the Lesser Antilles, parts of the Chaco, and southern Brazil. In these areas the plastic and painted techniques are used in about equal proportion.

Plastic treatment in South American ceramics embraces the following types of decoration or surface modification: Incision (both bold and fine line), punctation, fingernail-impression, finger-impression, rocker-stamping (both plain and dentate), brushing or combing, large indentation (as distinct from punctation), fabric, basketry-, or net-impressions, modeled (adornos, lugs, etc.), relief-modeled, filleted, and effigy sculptured. An exception to true plastic treatment is the engraving technique, where the vessel is scored or carved after firing. Engraving and the closely related postfired champlevé technique, when they occur, are usually found in association with plastic techniques. Plastic treatment is usually carried out before, but sometimes after, the slipping of the surface. Much plastically ornamented pottery is, of course, not slipped. Incision and punctation appear to have been achieved with fine or blunt-pointed tools of wood or bone; rocker-stamping was done with either a roulette or a flat-edged implement rocked or zigzagged across the surface; textile-impressed surfacing may be the result of basketry or net construction although this would not have to be the case; and modeling or sculpturing when not done by means of a mold, was obviously done with the fingers and a wooden or bone implement for detail work.

Painted treatment in South America ranges from a monochrome slip or monochrome decoration on an unslipped surface to the use of as many as 11 color shades. Red, white, and black are the most common colors, and two- or three-color painting in varying shades of these colors are the most usual combinations. More elaborately painted polychromes may involve an additional shade of red, an orange, or the much rarer blues, greens, grays, purples, and yellows. In any pottery painting, or painting combination, the surface tone may vary from a dull chalkiness to a bright luster. Luster and excellence of painting and design usually are associated. There is negative, or resist-dye, painting as well as positive painting. Quite often the two techniques are combined by adding positive pigment designs to the two-color negative patterns. The negative technique in pottery decoration, which is found along the Andes from Southern Perú to Colombia and into Central America, plus isolated finds at Rebordello, in the delta of the Amazon, and on the Uaupés River, is uniformly achieved by dipping a reddish, orange, or white-slipped vessel into a maroon-brown or blackish dye.

An exception to painted pottery decorated with fired, permanent pigments is ware painted with "fugitive" colors, or paint that is not set by heating. In South Perú, this type of painting appears early and seems to be related to a long, subsequent tradition of fired-painted pottery. It is also reported historically from several tribes in the Tropical Forest.

The matter of design transfers from other crafts should be mentioned in connection with pottery decoration. There are many instances where it is clear that the designs executed in paint or by incision on pottery are duplications of designs made on wood, stone, bone, shell, textiles, or even directly upon the human body. A case in point is among the historic and modern peoples of the upper Amazon. There, the same, or very similar, designs are painted on houses, canoe paddles, human faces, and polychrome pottery. Similarly, in the Chavín Period of prehistoric Perú, stone and bone were carved in the same style and manner as pottery was incised and sculptured. West Indian prehistoric periods also show this relationship between pottery and stone-carving designs, and there are excellent examples of element and motif duplication on the pottery, textiles, and in wood carving of some of the archeological cultures of the South Peruvian Coast. Some students have seen the priority of development in one technology over others on the bases of these transfers. For instance, Tiahaunaco stone-carving and pottery-painting designs appear to be of textile weave origin, implying that the Tiahaunaco art style, or part of it, was a textile art before it became a stone-carving and pottery-painting art. For the most part, however, the problems of style and design origins, with respect to South American ceramics and other craft techniques, cannot now be satisfactorily answered. The most we can be sure of is that tribal or regional art styles flourished at particular times and places and were not, as a rule, confined only to one medium.

### FUNCTIONAL

Most South American pottery functioned as utility containers in the preparation, serving, and storage of food and drink. In all areas where pottery was made it was put to these uses. In some areas, such as the interior hinterlands of eastern Brazil and southern South America, virtually no other pottery was made except such utilitarian ware. Usually, pottery which fulfilled these culinary and storage functions was not highly decorated or elaborate in form. Bowls, jars, griddles, plates, and pan-shaped vessels of all sizes served these mundane purposes.

The other large functional category of South American pottery containers is generally considered as ceremonial. This includes vessels which are thought to be of too fine a quality to have been used for cooking, eating, or storage; vessels which show no evidences of kitchen use; and burial urns and vessels which are often found under conditions demonstrating their social or religious functions. Actually, there is a great deal of overlap between the "utilitarian" and the "ceremonial" in pottery containers. Well-painted or modeled vessels, which show no signs of smoke-smudging or other evidences of use, may have been used as food containers or eating dishes as well as votive offerings; or, on the other hand, smoke-blackened ollas, obviously used for kitchen purposes, are often found in graves, as accompanying gifts for the dead. By and large, ceremonial vessels are more finely and carefully ornamented and of a more unusual shape than the associated wares of their period or complex; they are used as grave offerings or they are found under circumstances which attest to their nonutilitarian function; and they are relatively rare compared to the other pottery of the site and period. On the ethnographic level, of course, the ceremonial functions can readily be determined.

There are a great many noncontainer ceramic forms in South America. Many of these are related to food preparation activities. Potstands, "tubulares" (which may be "firedogs" or pot-rests), grinding platters, spherical-headed grinding implements, rollers, ladles, stoves, and braziers are representative of this group.

Figurines are another important noncontainer group. These may be hollow, solid, mold-made, or hand-made. There is a considerable range in their excellence within South America. Their function was apparently ceremonial. They are often found with the dead.

Pottery musical instruments are commonly found both archeologically and ethnographically. These include whistles which are often effigy figures, ocarinas, drums, rattles, panpipes (pl. 37, *e*) and trumpets (pl. 37, *c*).

House furnishings include clay cappings placed on the apex of house ridge poles (pl. 37, *f*) and three-legged clay stools.

Pottery stamps were made for both body and textile ornamentation. Both plane or flat, and roller or cylindrical, stamps were used. Dyes or paints served as coloring.

The only articles of clothing made of pottery are the female pubic covers or "tangas" of the lower Amazon. Pottery ornaments, such as pendants, etc., were, however, widely used.

Little models or toys were manufactured in some areas, and presumably these were for children. They are often found in the graves of infants.

The ceramic industry itself is represented by pottery cores and molds, which are abundant in many places. The textile industry is represented by pottery spindle whorls.

There are also ceramic objects best classed as ceremonial. Among these, the incensarios are obviously related to ritual practices. In Ecuador, long pottery tubes are found in graves as though they were so placed to establish some sort of spirit communication between the departed and the living.

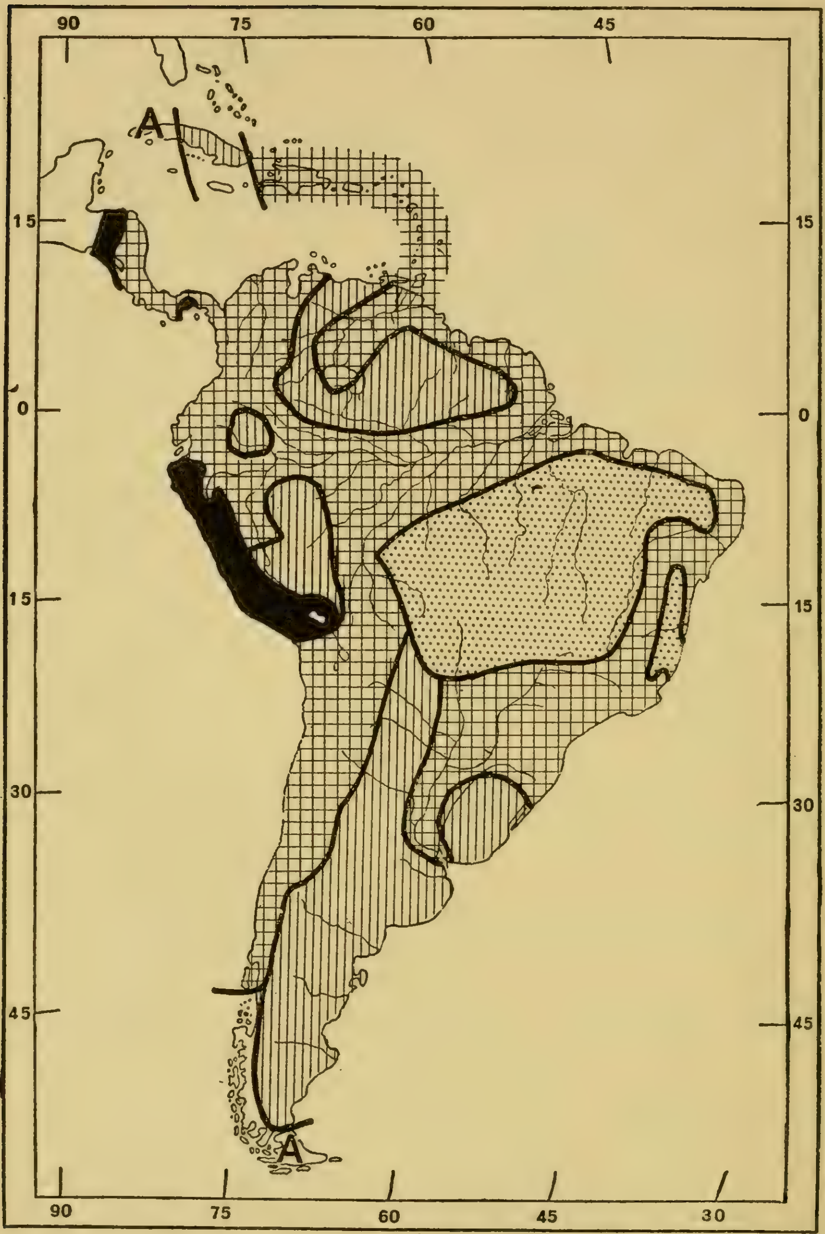
## LEVELS OF POTTERY DEVELOPMENT

### EVOLUTIONARY PREMISES

This section, preliminary to an examination of specific pottery areas and histories which is to follow, is concerned with the premise that ceramics in South America have pursued a course of development from simple to complex. The earlier stages of such a development are characterized by crude, experimental forms. The later stages, conversely, show a variety of form and technical virtuosity and fulfill a wider range of functions in the cultural context. This ceramic development in South America has been divided into five levels or progressive stages. The latter four are each defined by a set of technological and morphological criteria. These levels and their order of progression are: (1) Absence of Pottery; (2) Crude, Undecorated Pottery; (3) Simple Plastic and/or Painted Pottery; (4) Controlled Plastic and/or Painted Pottery; and (5) Advanced Plastic and/or Painted Pottery.

Map 1 is a distributional plotting, without reference to time, of these five levels. The distributions have the following implications: Areas indicated for "Absence of Pottery" are, by inference, "prepottery" as well as "nonpottery" areas. These are the regions in which no aboriginal ceramics have ever been reported, either in the archeological past or in the ethnographic present. The next level in the scale, "Crude, Undecorated Pottery," is plotted for those areas where there are no ceramics other than those of this category. Inferentially, these areas were also, during a presumed earlier period, on the "prepottery" level. Similarly, the succeeding levels, "Simple Plastic and Painted," "Controlled Plastic and Painted," and "Advanced Plastic and Painted" are shown for those areas where each, respectively, represents the highest development of the ceramic art. By implication, the "Advanced" stage rests upon all four preceding stages of the hypothetical development. This does not necessarily mean that all four of the preceding levels will be found in an area of "Advanced" pottery, although this may be the case. It does, however, mean that "Advanced" pottery is the end product of an evolutionary series for which all stages are represented on the South American continent.

Such a scheme is either predicated upon the origins of pottery within the South American continent, or upon the earliest diffusion of the ceramic idea into South America upon the "Crude" level. It does not necessarily run counter to the idea of later pottery stimuli being diffused into South America from without, but it considers that such outer influences were incorporated into the general developmental picture, and while they may have accelerated or retarded any steps of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Map 1.—Pottery levels. *A*, Pottery Absent; *stipple*, Crude; *vertical hachure*, Simple; *cross hachure*, Controlled; *black*, Advanced.

the scale, they did not fundamentally change the over-all trends. Likewise, although cross-currents of influence within South America may have modified various localized ceramic histories, they did not effect important changes or reversals of trend directions.

It is also implicit in an evolutionary theory of pottery development that the pottery stages were related to, and a part of, a more complex and inclusive cultural evolution. It is to be expected that the hypothesized pottery levels will correlate with comparable cultural levels or degrees of cultural status and advancement.

## THE POTTERY LEVELS

**Absence of Pottery.**—The only areas in South America about which it can be stated with certainty that they were without pottery throughout all periods of native occupation are the northern and southern extremities of the continent (see map 1). Pottery has never been found in western Cuba nor in Tierra del Fuego and the southern Chilean archipelago and mainland. At the period of European contact, the tribes in these two terminal areas of South America were the *Ciboney* of Cuba and the *Ona*, *Haus*, *Yahgan*, *Alacaluf*, and *Chono* of southern South America.

Several other South American tribes, in the interior forests of Brazil and Bolivia, are reported as being without pottery at the time of European contact. Lowie (Handbook, vol. 1) lists the *Northwest* and *Central Ge* (*Timbira*, *Northern* and *Southern Cayapó*, *Suya*, *Akwe*, and *Acroa*) and the *Patasho* as lacking ceramics. Nimuendajú and Levi-Strauss (Handbook, vol. 3) include the nearby *Cawahíb*, *Parintintin*, and the *Eastern Nambicuara* as potteryless; nor does Nimuendajú mention pottery for the *Mura-Pirahá* of the lower Maicy River. Nordenskiöld (1919 a) also reports a few tribes of eastern Bolivia as being without pottery. It seems most likely, however, that all of these people had either possessed the pottery art at an earlier date or that the region in which they lived had at some time in the past been inhabited by people who used pottery. Crude, plain pottery has, in fact, been found archeologically on the Araguaya River in *Ge* country, and the rich archeological ceramic finds of the Mojos Province of eastern Bolivia argue that the nonceramic status of tribes in this region represented a temporary condition for the area. For these reasons, the areas occupied in historic times by all of the above-mentioned interior tribes have been grouped within the distribution of one of the other pottery levels.

**Crude Undecorated Pottery.**—This level is conceived of as the manufacture of plain, unslipped, unpainted, or virtually undecorated pottery. Vessel forms are few and simple. Care or excellence in surface finish is not emphasized. Occasionally, coiling lines, slovenly arranged finger-impressions, or leaf-impressions relieve the plain surfaces.

The great interior country of eastern Brazil, extending west to the lowlands of Bolivia, and a smaller Brazilian area lying on and back from the coast, between 12° and 22° S. lat., are Crude Pottery areas (map 1) in which either no other types of pottery have been reported or in which they have appeared only in rare instances. In the area near the coast the pottery record is solely ethnographic. Here, the *Camacán*, *Mashacalí*, *Purí*, and *Coroado* made small globular pots, food bowls, open dishes, imitations of very simple fruit forms, and large water-storage jars. In the eastern half of the larger interior Brazilian area, similar ware is found ethnographically and archeologically. The historic tribes in this region were the *Guató*, *Bororo*, *Caingang*, *Southern Cayapó*, *Northwest* and *Central Ge*, *Carajá*, and some of the so-called "Tapuya" peoples. The western part of the Brazilian interior area of Crude Undecorated Pottery includes the region occupied in historic times by the *Sirionó*, *Guarayú*, *Pauserna*, the *Chapacurans*, the various tribes of the right bank of the Guaporé River, the *Paressí*, *Tupí-Cawahíb*, *Cawahíb*, *Parintintin*, *Nambicuara*, and *Apiacá*. These peoples are reported as being without pottery or making undecorated wares similar to those found to the east. In general, the pottery of the west of the interior area is a little better than that of the eastern part. Resin varnishes, wax coatings, and postfired fugitive painting were known; but there is no evidence to show that the more complicated techniques of permanent slipping or painting were ever used here.

It has been difficult to assign western and northern boundaries to the Crude Pottery area. Based upon ethnography, archeology, and, to a great extent, archeological inference, these northern and western boundaries can be only generally correct. For example, the *Mundurucú* and *Mura*, situated north of the *Parintintin* and *Cawahíb*, are reported as being potteryless or possessing very crude ware; yet their position, athwart the lower and middle Madeira River, makes it seem extremely unlikely that these particular regions were without pottery at all times in the past. The Mojos mounds excavated by Nordenskiöld (1913) on a tributary of the upper Madeira show well-developed ceramics of probable Amazonian affiliations, and this suggests that similar pottery may at one time have been established all along the course of the Madeira. This probability, together with the presence of fine pottery on the lower and middle Xingú and other tributaries of the south drainage of the Amazon, are the bases for drawing the boundary line between Crude and Controlled pottery distributions from a point just inland of the Bahia de São Marcos to an arbitrarily selected point somewhere west of *Tupí-Cawahíb* territory. The western boundary of Crude Undecorated Pottery then slants southeast from this last reference point, splitting off the area of the right bank of the Guapore River, the *Chapacurans*, and *Sirionó* from the Mojos region to the west. The eastern and southern boundaries of Crude Undecorated are more specifically delimited by the absence of *Guaraní* or *Tupinamba* penetration.

A few exceptions within the Crude Undecorated area, which are not indicated upon the map, are the *Tapirapé* of the upper Araguaya drainage and the nearby *Arawakan* tribes of the upper Xingú. These people made Simple level pottery which was sometimes decorated with incisions and modeled zoomorphic adornos. Because of the locations, these occurrances are recorded as exceptions rather than plotted on the map, the function of which is that of indicating mass distributions. It may be, of course, that *Arawakan* peoples, in pushing up these rivers from the north, distributed Simple Plastic or Controlled Plastic Pottery all along the upper drainages of the Tocantins, Xingú, and Tapajóz systems.. If so, future data will bring about significant revisions in the present distributions.

**Simple Plastic and/or Painted Pottery.**—This designation includes decoration by simply conceived and often crudely executed designs done in techniques of plastic manipulation of the prefired vessel surface such as incision, punctation, fingernail markings, and fabric, basketry, or net impressions. Modeled life forms of an inexpert sort, affixed as lugs, adornos, or handles, are also included. Simple painting is defined as decoration in one or two colors applied to the unslipped surface of the vessel and fired to permanence. Such painting may accompany plastic treatment on the same vessel, such as the use of red pigment in or between incised lines. Wares of the Simple Plastic and Painted level are better made than those of the Crude level but lack the technical excellence of Controlled level pottery. Forms are still relatively limited in number, and they appear to be mainly used for cooking, eating, and storing food.

Simple pottery characterizes southern South America, where it is found from the Straits of Magellan, through Patagonia, the Pampas, Uruguay, and north into the Argentine, Paraguayan, and Bolivian Chaco. Near the La Plata Delta pigments were used in simple painting, often combined with incision and punctation. Punctated-line or linear-punctation is a frequent technique of the north Pampas. Farther south, incision is simpler, the design arrangements less well planned, and there is no painting. In San Luis and Córdoba net-impressed pottery is found in addition to incised types.

Vessel forms of southern South America are generally simple, running mainly to subglobular bowls. North of parallel 30 south, the central area of the Chaco, occupied by the *Mataco*, *Chorotí*, *Toba*, *Pilagá*, and *Ashluslay*, has simple wares decorated with arranged fingernail-impressions, appliqué pellets, and cord impressions which sometimes separate zones of red and black simple painting. Impermanent resin painting is also employed. Vessel forms of the Simple Plastic and Painted level of the Chaco are slightly more complex than those of the south.

Two large sections of the Montaña or east Andean country of Bolivia, Perú, and western Brazil have only Simple level pottery. These sections lie north and south of the main Amazon tributaries, away from the main streams. To the south the Simple pottery area takes in the tribal territories of the *Mayoruna*, *Campa*, *Piro*, *Nocomán*, *Cashibo*, *Machiguenga*, *Careneri*, *Masco*, *Chontaquiro*, *Maniteneri*, and other nearby groups. The northern Montaña block of Simple level ceramics covers the tribal locations of such peoples as the *Itucal*, *Yagua*, *Roamaina*, *Iquito*, and *Awishira*. Surface finish and decoration techniques of the Montaña are slightly more advanced than those of southern South America. Single color (red) painting is common; and sometimes color is used as a slip for one surface of a vessel, although there is no overpainting of design. Smoke-blackening of the vessel interior is a frequent treatment. Other techniques are punctation, fingernail-impression, and impermanent paints and resin glazes. Vessel forms are simple and clearly related to food activities.

The huge interior Venezuelan-Guiana area is the least well documented of any on the pottery level distribution map. There is only Simple level pottery from the northeast Venezuelan coast, the Goajira Peninsula, and the llanos northeast of the Orinoco drainage. Back in the interior of the Guianas and the area lying south and west of the upper branches of the Orinoco there is almost no information on ceramics. Historic-period tribes such as the *Shiriana*, *Waica*, and *Macú* made only very simple pottery. On the other hand, there is a possibility that an important belt of cultural contact once existed through the upper Orinoco-Rio Negro region, directly linking the Orinoco and Amazonian drainages. If so, Controlled level pottery could have spread through the interior now marked as a Simple pottery zone. For the present, however, it seems best to consider the pottery of this interior region between the two great rivers as being on about the same level as that of the Venezuelan llanos and northeast coast. Pottery of the northeast coast was sometimes buff slipped, sometimes decorated with crude modeling and incising, and sometimes with linear painting in red. Vessel forms are more complicated than are usually found in association with Simple level wares, including griddles and annular-base vessels. Large drab urns and fabric-impressed pottery are reported from the interior llanos.

Central and eastern Cuba and Jamaica have Simple level incised, punctated, appliqué, and modeled wares. Bowls, oval and boat-shaped, and griddles are the usual forms of these simpler West Indian wares.

**Controlled Plastic and/or Painted Pottery.**—The implications of the term "Controlled" are that on this level of pottery development the potter has completely mastered the craft of making and ornamenting nonwheel-made, nonglaze ceramics. All of the techniques were known and practiced with skill. Effigy adornos and effigy vessels are either convincingly realistic or firmly stylized. Vessel shaping is exact and pleasing; surface finish good to excellent; and polishing and slipping are the rule. Slipped bichromes, trichromes, and, occasionally four-color polychromes are typical of the painting. Incised and punctated design is better planned, executed, and more intricate than on the Simple level. Virtually all combinations of the principal ornamental techniques occur. Painting is combined with incision and modeling on the single specimen. In addition to the more customary decorative techniques, champlevé (after firing) and negative ("batik" process) painting were also achieved on this level. Not universally, but in general, the materials and construction of pottery is superior to the Simple level. Aplastics are finer; paste is more homogeneous; and firing is more uniform. In form, there is no longer the feeling that the artisan is extending himself to successfully construct a simple container. Vessel shapes are multitudinous, and there is virtuosity in attempting and attaining unusual shapes. In addition to the basic bowl, plate, jar, and bottle themes, there are unusual effigy shapes, composite urns, legged and based vessels, compartmented vessels, miscellaneous elaborate fabrications. Noncontainer forms are more prevalent than on the earlier levels. Spindle whorls, good figurines, musical instruments, smoking pipes, pubic covers, seats, and house ridge-pole caps are made and decorated in the same manner as vessels. It is apparent that there are new functions for ceramics not present on the lower levels of ceramic development. Pottery is no longer a simple implement of food preparation, but it now carries new uses and is bound up with religious and social meanings. Along with this, it is also evident that pottery making was becoming a specialized craft, practiced proportionately by fewer but more skilled people within a community or village. Finally, pottery on this level is not only better than it is on the lower levels but it is much more abundant.

According to criteria established for this survey, there is a greater total area of South America on the Controlled level than on any of the other pottery levels. This Controlled pottery area embraces wide latitudes in standards of ceramic craftsmanship. Least developed is the pottery of the Brazilian coast, southern Brazil, and the Paraná drainage. The Controlled pottery of this section, attributed to the *Tupí-Guaraní*, has a variety of forms which are painted with rectilinear repetitive red and black designs upon a white slip.

More ambitious pottery is found in the Amazon drainage, where Marajó, at the Delta, is probably the peak of Amazonian ceramic virtuosity. Relief and incised techniques are often combined with slipping and handsome two- and three-color decorative painting. Anthropomorphic and zoomorphic motifs are typical. Pottery on a comparable technological and artistic level, although stylistically different, is found on the coast above Marajó and on the Tapajóz at Santarém. In both of these localities full-round modeling of life forms is carried to unusual and fantastic lengths. Varieties of Amazonian painted or plastic pottery are found all the way to the Montaña and extend up the main tributaries of the Amazon for a considerable distance.

Controlled level pottery also extends from Southern Perú down to Chiloé and over into the Argentine Highlands. The archeological and ethnic areas of the extreme South Peruvian Coast, North Chile or the *Atacameño* territory, the Argentine Puna, the *Diaguita* country of Argentina and Chile, Santiago del Estero, La Candelaria, the highlands of Mendoza in Argentina, and the *Araucanian* country of Central and South Chile are included. Ceramics of these sections lack the elaborateness of the lower Amazon, but are competently made and decorated. Two- and three-color painting is the rule, although incision, punctation, modeling and sculpturing occur in small amounts. Painted design elements and arrangements are essentially geometric, usually rectilinear, and repetitive. Even when life forms are depicted, the figures are stiff and unrealistic. A characteristic vessel form is the single-handled pitcher.

Some of the best pottery of the Controlled level is found in northwestern South America in Ecuador, Colombia, and adjacent highland and northwestern Venezuela. This section shows great diversity of vessel form. Tripod bowls, pedestal-base forms, compoteras, double-vessels, stirrup-spout jars, whistling jars, and other bizarre forms obtain in great numbers in addition to the more usual container types. The ceramic crafts also included clay seats, ocarinas, whistles, spindle whorls, seals or stamps, and hand-made and mold-made figurines. Painting and plastic treatment is approximately balanced as to quality and quantity. Incision, punctation, appliqué, and adorno and full-round modeling are all present. Negative or resist-dye painting, sometimes combined with direct painting, is abundant. Design is principally geometric, with both rectilinear and curvilinear elements employed.

On the Orinoco River and in the West Indies, incising and modeling is dominant, although there is some two-color painting and slipped polished ware. Incised designs are mainly curvilinear, and biomorphic adornos are typical. The range of vessel forms is limited as compared to Ecuador and Colombia and unambitious as compared with the lower Amazon. Most of the data on the Antilles and the Orinoco are archeological, although the historic *Guahibo* tribe on the upper Orinoco is reported to have had "beautifully painted pots."

Most of Central American pottery attains to only the Controlled level. Monochromes are decorated with incision, punctation, modeling, and appliqué techniques. Polychromes and bichromes do occur, however, and negative painting is present. Vessel forms are complex rather than simple in that tripods, high annular bases, and effigies are plentiful. Noncontainer forms are numerous and varied, including pottery stamps (flat and cylindrical), figurines (hand-made and mold-made), whistles, molds for figurines, incensarios, drums, rattles, and whorls.

**Advanced Plastic and/or Painted Pottery.**—The distinction between "Advanced" and "Controlled" is mainly one of degree rather than kind. All of the techniques of manufacture, surfacing, and decorating were known on the previous level; the Advanced level carries these techniques farther and, in general, attains a greater mastery of them than was known on the lower levels. The differences of degree are easily seen in the handling of a number of artistic and ornamental techniques. Where three-color polychromes were the rule for the Controlled level, multicolors come in with the Advanced level. Five and six shades are common in some regions of Advanced pottery, and as many as 11 have been recorded. In design, there is more attempt to portray naturalistic or imaginary beings, either realistic or stylized, as the central themes of the painting. Repetitive geometric elements and arrangements are more likely to be relegated to a minor position in the total composition, such as border bands, etc. It is not so much a matter of design intricacy, for the designs of much of the Controlled level pottery are intricate, as it is a clarity and unity in the successful expression of a central theme. Also, true realistic portrayals are achieved only on this level. Modeling becomes sculpture, and this development is closely related to the skilled use of molds. The other plastic techniques of incision, punctation, and appliqué play only a secondary role in the embellishment of sculptured products. Incision is rarely used in conjunction with painting, although modeling or sculpturing are often combined with painted decoration. There is a diversity of form, and by implication of function, as great, if not greater, than on the Controlled level. In view of the excellence of the product, it is almost a certainty that a special class of artisans was devoted to ceramics. In quantity, there is a clear impression that pottery production was great.

The principal area for Advanced level pottery is the Peruvian Coast and Highlands. Mold-made realistic sculptures of human beings and animals and elaborate multicolor polychromes are characteristic. Some of the vessel forms are complicated, although the impression of structural complexity is enhanced by the fact that the basic jar or bottle shape was sculptured to conform to a variety of life forms. Ceramics of all kinds, in addition to vessels, are exceedingly plentiful in the Peruvian area.

Another advanced level area is in Honduras and western Nicaragua and Costa Rica. This section is characterized, in Honduras, by the sophisticated *Maya* style of polychrome vase painting which depicts humans participating in ceremonial activities. There is also some finely sculptured low-relief pottery in the same region. Advanced level pottery in Nicaragua and Costa Rica combines polychrome painting and modeling to produce exceptionally good conventionalized animal and bird vases.

A third small area has been indicated in Panamá, in the vicinity of Coclé. The polychromes of this section are usually three- or four-colored. Although modeling is combined in some effigy vessels, the outstanding development is in painted design which, while intricate, is exceedingly well balanced and unified around central themes. These themes or central motifs are stylized animals, reptiles, birds, fish, or monsters. The style is essentially curvilinear. Bowls, jars, spouted jars, annular-based vessels, compoteras, trays, flat circular dishes, and bottles or carafes are common forms.

## HISTORICAL IMPLICATIONS

The distribution map of developmental levels in South American pottery suggests two main lines of historical explanation. First, it can be assumed that pottery either had an independent origin, or origins, in South America, or was first diffused to the continent on the Crude level and thereafter spread to almost all quarters. Following these beginnings, various regional developments were pursued, more or less independently, with the result that some areas, for specific historical and environmental reasons, went far ahead of others in ceramic development. The second explanation assumes that there was a South American center of pottery origin, or primary contact, for the continent; and that from this center the technique characteristic of the successive ceramic stages diffused outward in a series of waves. As will be seen in the succeeding discussions, neither of these explanations can be conclusively proved to the absolute exclusion of the other, and the processes involved in both undoubtedly operated in conjunction. A majority of the evidence, however, favors the second postulate, that of a diffusion of the major pottery techniques in a series of waves, from a common center. Secondary focal points or centers were, of course, important parts of the mechanism of dissemination.

A diffusionist and age-area interpretation of the map indicates that this primary center of South American pottery origins or beginnings is in the western rather than the eastern axis of the continent, and near the central or northern portion of this axis rather than at the southern end. This is substantiated by the absence of pottery in the northeastern and far southern continental extremities, by the distributions of Crude and Simple level pottery in the north, south, and refuge hinterlands of the Tropical Forest to the east, by the Amazonian and Andean distributions of Controlled level pottery, and by the occurrence of Advanced ceramics only in the central and northern parts of the western axis of the continent.

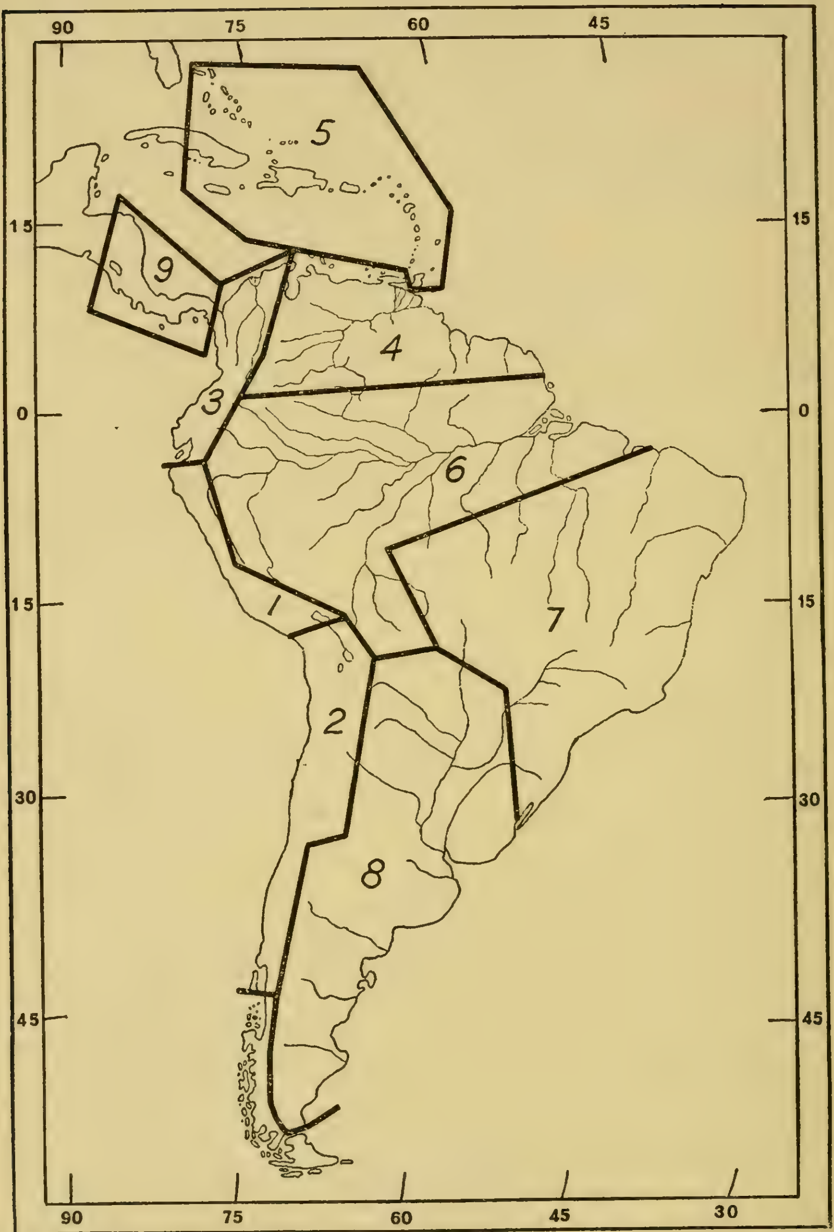
In general, the distribution indicates that the main routes of the diffusions were along the major rivers, along the Andean chain, or along the coasts. The geographical patterning of the diffusion, thus, is not necessarily concentric.

## THE AREAS OF POTTERY HISTORY

### HISTORICAL PREMISES

The areas of pottery history, or pottery areas, are premised upon the assumption that all of the pottery within a given geographically defined area is interrelated historically. This does not deny that the pottery of one area is similarly related to the pottery of another area, or that there is some degree of common historical relationship for all of South American ceramics. What evidence is at hand, in fact, argues strongly that these broader historical affiliations are real. The pottery areas as they have been defined for this survey (see map 2) are attempts to combine together into geographical units ceramic materials and ceramic histories which have closer internal affiliations than external or extra-areal affiliation. For the practical purpose of tracing specific ceramic forms in time and space these areal groupings have been blocked out to give the clearest, most immediate, and, for the present, best documented historical picture.

It should be emphasized that the areas of pottery history are in no way necessarily coextensive with the areas of pottery level development. The former have a historical and genetic basis while the latter are founded upon comparisons of competency and achievement in ceramic techniques among groups of specimens which need not have any common ancestry with each other. That there are some coincidences of boundaries between the two types of area classification is to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Map 2.—Areas of pottery history. 1, Central Andean. 2, South Andean. 3, North Andean. 4, Venezuelan. 5, Antillean. 6, Amazonian. 7, East Brazilian. 8, Southern. 9, Central American.

be expected, inasmuch as features characteristic of a pottery level, for instance, the Advanced, are historically transmitted and conditioned at the same time that they are evolved.

The nine pottery areas outlined (map 2) in order of their discussion are: (1) The Central Andean (Peruvian Coast, Highlands, and a part of the Bolivian altiplano); (2) the South Andean (South Perú, Chilean Coast and Highlands, and the Argentine Highlands); (3) the North Andean (Ecuadorean Coast and Highlands, the Colombian Pacific, and Caribbean Coasts, and the Colombian Highland ranges and intermontane valleys); (4) the Venezuelan (Venezuela and the Guianas coast); (5) the Antillean (West Indies); (6) the Amazonian (the Amazon coast and drainage, including the Montaña drainages and the middles and lower courses of the great tributaries); (7) the East Brazilian (Brazilian Coast below the Amazon Delta and the interior uplands of eastern Brazil); (8) the Southern (Paraná River system, Pampas, and Patagonia); (9) the Central American (Central America up to Salvador and western Honduras). In some areas the complex and intertwined histories of the different ceramic lines are reasonably well known; in others there is very little information. The areas have been drawn with straight lines, as exact cultural-ceramic boundaries are rarely known. Some areas, such as the Central Andean and the South Andean, can be clearly delineated from adjacent pottery areas. In these the distinguishing criteria are well-defined and the area boundaries appear to be well founded in historical reality. Other divisions, such as the one between the North Andean and Central American areas, have been made more for descriptive convenience than on the basis of historical evidence, which is often lacking.

There are several concepts, beside the pottery area, which are commonly used in South American historical studies of ceramics and which it might be well to define before proceeding with areal discussions.

The terms pottery "type" and "style" have been used synonymously or interchangeably by some investigators, and with others the type has been merely a subdivision of the style, the difference being of quantity and range of data embraced. The style abstraction, as defined, is a certain specified descriptive range in material, constructional, formal, and ornamental features. These specified features tend to be associated or clustered, to the exclusion of other features of similar functions, in the production of a ceramic specimen. The reality of style classification is that a number of specimens are grouped together on the basis of similarity to each other. It has been usual to demonstrate for each style certain time and space correlates so that the style is not simply a descriptive label but has a definite value placed upon it as a historical and geographical marker in culture studies.

The "site," or "limited zone," is the actual location where ceramics are found. It may be archeological (an abandoned community) or ethnographical (an occupied community). The term "limited zone" has reference to small-site clusterings, such as those in an isolated mountain valley, in a coastal valley, at a river delta, or any reasonably restricted region where there has been, or is, intensive occupation.

The "pottery period" is a defined time interval, at a site or in a limited zone, during which specified pottery styles were made and used. Such a period may be the present or it may be a segment of past time.

A "pottery horizon" is a ceramic period of wide spatial reference. Whereas the pottery period pertains to the site or limited zone, the horizon has meaning throughout a pottery area, a large portion of an area, or, perhaps, in more than one area. It is defined by the presence of certain styles, and these styles that have such wide areal significance are called "horizon styles" (Kroeber, 1944).

A "pottery tradition" is a line, or a number of lines, of pottery development followed through time. It remains within the limits of a certain technique, or set of techniques; and in these limits, on successive periods or horizons, the tradition is expressed in particular styles. The tradition has meaning within a wide geographical frame of reference, covering a subareal, areal, or extra-areal field (Willey, 1945).

## THE POTTERY AREAS

**The Central Andean.**—The available data on the rich Central Andean area is greater, more reliable, and better organized than that for any of the other areas of pottery history. Because of this a more complete presentation of pottery styles, periods, and cross-currents of relationships is possible than for the other areas. For the same reasons it is impossible to list all the known Perú-Bolivian ceramic styles or to discuss their distribution, temporal position, and interrelationships in any detail. Such a detailed summary is provided in volume 2 of this Handbook (Bennett, pp. 61–147).

In brief, Central Andean pottery history is divided into four major time periods: Chavín, Early, Middle, and Late. Each is typified by certain styles. A group of Chavín styles, including Highland Chavín, Coast Chavín, and Early Ancón-Supe (pl. 29, *a–c*), mark this earliest major period. Highland Chavín and Ancón-Supe are quite similar, and for the most part, these styles are on the Simple Incised and Painted developmental level. They are monochrome wares decorated with bold incisions, punctations, and surface roughening techniques such as rocker-stamping. Vessel forms are not complex or ornate. Coast Chavín (or Cupisnique) (pl. 29, *d*) is often elaborately incised and sculptured. Many of the pieces attain the Advanced level of pottery development. Vessel forms are more complex, with the stirrup-spout jar making its first important appearance. Coast Chavín (Cupisnique) is limited to a few valleys of the North Coast of Perú; Highland Chavín is found in the North Highlands of Perú; Early Ancón-Supe is on the Central Peruvian Coast; and there are also Chavinoid styles on the Coast in the valleys lying intermediate between the Supe zone and the Virú Valley to the north. In spite of these regional stylistic variations within the Chavín Period, there are also stylistic features held in common, and these are of such a specific nature that the variant styles are often grouped together as a Chavín horizon style.

Early Period pottery shows more regional diversity than the earlier Chavín Period. The great styles of this period achieved the Advanced level, others the Controlled stage. On the North Coast, Chavín is followed by Salinar (pl. 31, *a*), and this in turn by the well-known Mochica (Early Chimu) (pl. 31, *b*, *d*) style. Another style, Gallinazo or Virú Negative (pl. 30, *b*), is also found in the same region. There is still dispute as to the time position of Gallinazo, but it is most likely post-Salinar and pre-Mochica. Salinar utilizes Controlled modeling and White-on-red painting; Gallinazo is chiefly characterized by Controlled negative painting; Mochica is the classical example of Advanced, mold-made sculpture as well as excellent figure painting in two colors. In the North Highlands, near Recuay, two- and three-color negative painting combines with figure modeling, occasionally resulting in Advanced pottery (pl. 30, *a*). The best evidence indicates that this Highland Recuay style is contemporaneous with, and influenced by, the North Coast Gallinazo and Mochica styles. A North Highland Controlled level White-on-red style may tentatively be placed as coeval with Salinar. On the Central Coast, around Lima, are a group of styles contemporaneous with the Early Period styles of the north. Chancay White-on-red (pl. 30, *c*) is the simplest of these, and can be equated, tentatively, with Salinar, which it resembles. Interlocking (a three-color positive style) (pl. 30, *f*) and a Pachacamac negative style have a number of design-motif relationships to Recuay.

The only Early Period Advanced style from the Central Coast is Early Lima (pl. 30, *d*), which is well-painted in three or four colors and combines plastic features of Mochica with Interlocking and Nazca elements. On the South Coast, in the Ica and Nazca zones, there are several distinct styles. One of these, the Paracas Cavernas (pl. 29, *e*), may be as early as Coastal Chavín. Paracas Cavernas is, however, a polychrome style, sometimes done in permanent pigments and sometimes in what appear to be fugitive colors. The painting is also combined with fine-line incision. Another associated Cavernas style has only simple punctated ornamentation. Paracas Cavernas pottery can be considered, in the main, to be on the Controlled level. The subsequent Nazca (pl. 30, *e*) styles are excellent examples of Advanced polychromes. Nazca uses a wide selection of colors; the pigments are bright and clear, and the surfaces are highly polished. Naturalistic but conventionalized design motifs dominate the decoration. The South Highland styles of the Early Period also emphasize polychrome decoration. The Early Tiahuanaco style combines painting with incision and, sometimes, with zoomorphic modeling. Classic Tiahuanaco (pl. 31, *c*) is more elaborate, utilizing several colors and depicting stylized animal figures where the Early Tiahuanaco style was restricted to geometric design motifs. Although only some of the Early Tiahuanaco material could be considered Advanced, virtually all of the decorated Classic Period pottery belongs on this level. There are two other Early Period styles in the South Highlands, whose exact chronological relationships to Classic or Early Tiahuanaco have not been established. One of these is Chiripa (fig. 42), a two- or three-color ware, which combines painting with incision, and small relief decorations. Chiripa is Controlled level pottery. The other style is the Pucara (pl. 29, *g*). Pucara is only a three-color ware (black and yellow on a red base) and the design areas are separated by incised lines; however, in design, brightness of color, and quality of finish, Pucara ranks as Advanced pottery. One other Highland style, probably of the Early Period, deserves mention. This is Chanapata (pl. 29, *f*) of the Central Highlands near Cuzco. It is placed in the Early category on the basis of its rather general stylistic relationships with Chiripa and with Highland Chavín. It is a polished black ware with applied relief ornaments and simple incised geometric or animal designs. Most of Chanapata should probably be rated as Controlled, although some of it might be considered as Simple.

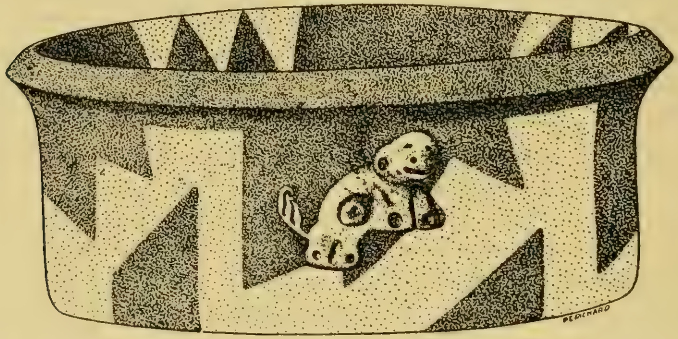


FIGURE 42.—Chiripa Yellow-on-red and modeled style. (After Bennett, 1936, fig. 28.)

The Middle Period differs from the Early in that there is an over-all unity of stylistic similarity in ceramics comparable to that noted for the Chavín Period. This linkage of several Middle Period styles makes up the Tiahuanaco horizon style. Notable features are a series of new vessel shapes which tend to replace old regional vessel forms, specific anthropomorphic design elements, and a tendency toward three-color (red, white, and black) ware. Some of the Middle Period Tiahuanaco (pl. 32, *a*, *b*) ware, such as that from Pachacamac on the Central Peruvian Coast, or Pacheco on the South Coast, is of exceedingly fine quality, equaling the classic wares of the Early Period in finish, brilliance of color, and mastery of design. Most Tiahuanacoid pottery does not, however, come up to these Advanced standards. The general trend is for Middle Period pottery to become less well decorated in the later subperiods. On the North and Central Coasts the better painted Epigonal (pl. 32, *d*) styles are replaced by less well done red, white, and black geometric styles (pl. 32, *e*). Pressed ware (pl. 32, *f*) which bears Tiahuanaco designs done in a relief technique, and a painted Cursive style with North Highland affinities also belong in the North Coast Middle Period series. All of these styles are on the Controlled but not the Advanced level. In the South Highlands and on the South Coast the Middle Period wares are not on a par with those of the Early Period. Fewer colors are used, and decoration is less imaginative, more geometric, and repetitious. Unlike most of the other Middle Period styles, the South Coast Middle Ica style (pl. 32, *c*) shows little Tiahuanaco influence, and is relatively distinct and unique on the Peruvian scene at this time. This is true not only of painted decoration but of vessel form.

The first half of the Late Period in the Central Andean area again shows intensive regional specialization of pottery styles, with Chimu (pl. 33, *a*) of the North Coast, the Late Chancay styles (pl. 33, *b*) of the Central Coast, and the Late Ica series of the South Coast holding the field. Coeval styles for the Highlands seem rather undistinctive. All of these styles, though adept, lack the elegance, either in multicolor painting or in realistic modeling that characterized the Early Period. They clearly belong on the Controlled level. The latter half of the Late Period is, to an extent, unified with the *Inca* ceramic style (pl. 33, *d*). In the Central Highlands, the *Inca* hearth, Early and Late *Inca* pottery divisions have been established. In other sites and zones throughout the Highlands and Coast, *Inca* pottery appears in proportionately small amounts, and *Inca* ceramic influence is combined in varying degrees with the local customs of pottery making and decorating. Some of the finest *Inca* polychrome vessels do, perhaps, come up to Advanced standards, but most *Inca* pottery achieves only the Controlled level.

Several continuities or traditions carry through Central Andean pottery history, and it is noted that some of these traditions have a tendency to be localized in different parts of the area. For example, the pottery of the South Peruvian Andes and Coast and the Bolivian Highlands is characterized through all periods of development by the use of three or more colors. Although this includes a great range of time and embraces several different styles, this emphasis upon color decoration appears to be a phenomenon of historical continuity. It has been named the South Perú-Bolivian Polychrome tradition. Another example of such a pottery continuity is the North Peruvian Plastic tradition. This tradition centered somewhere on the North Coast, and apparently had its beginnings with the Coast Chavín or Cupisnique style. The modeling, sculpturing, and mold techniques employed in the tradition continued through the Salinar, Mochica, Middle Period Pressed ware, and Chimu periods and styles. Emphasis was always upon the plastic with color decoration playing a subsidiary role. North Peruvian White-on-red, North Andean Negative Painted, and North Peruvian Incised are three other decorative traditions in the Central Andean area that have long histories.

Influences out of the Central Andean area are widespread. This is true for both styles and traditions. To the south, the pottery styles of Northern Argentina and Chile show varying degrees of dependency upon the Central Andes. Northward, there are numerous cross-ties, although some of these may be of Ecuadorean or Columbian origin rather than Peruvian. Eastward into the jungle, the influences are much less or none at all. There are, however, a few specific examples of Central Andean ceramic ideas penetrating into the eastern lowlands. Ceramic finds in eastern Bolivia are evidence of this (Bennett, 1936).

**The South Andean.**—In the arid portions of northern Chile, the principal Controlled pottery styles, are a Red-and-black-on-white and a Black-on-red (pl. 33, *c*). These are found on the coast at Arica and inland in the *Atacameño* oases. They have been referred to as the Arica, *Atacameño*, or Chincha-*Atacameña* styles. Some three-color Tiahuanaco pieces have been found in association with the *Atacameño* types. Recently it has been pointed out that the Churajón style from Southern Perú is closely related.

At Pichalo on the Chilean Coast two plain ware styles are reported as representative of ceramic periods. No decorated ware of any kind is found in association. The earlier of the plain ware periods shows red-slipped and polished black surface treatment; the later period has only unslipped pottery. The Pichalo styles, whether considered as Crude or Simple, are definitely less developed than the Arica-*Atacameño* wares. Evidence is not conclusive, but it is most probable that the Pichalo styles are earlier than the painted wares.

Between the Río Copiapo and the Río Choapa, south of the Atacama desert country, the dominant pottery styles are classed as Chilean *Diaguita* (pl. 33, *e*). There are perhaps three painted ware styles, all of which are on the Controlled level. A Tiahuanacoid style is present, showing unmistakable resemblances to the Bolivian Highlands in three- and four-color painting, straight-sided kero forms, and specific naturalistic painted designs. *Diaguita* features black and white geometric elements on a red ground. Chincha-*Diaguita* may be either red, black, and white, or black and white, and decorations are small and usually geometric. There is a bare hint that the three styles may be arranged chronologically in the order in which they are listed here. In the same region there is a plain, and perhaps an incised, style known as El Molle. It is found in isolated grave lots and probably represents a ceramic period, but chronological relationships of El Molle to the Chilean *Diaguita* styles are unknown. Like the Pichalo pottery, El Molle seems to be on the boundary between Crude and Simple level pottery. Painted *Inca* ceramics have also been found in the Chilean *Diaguita* country, and these are dated at the top of the ceramic sequence.

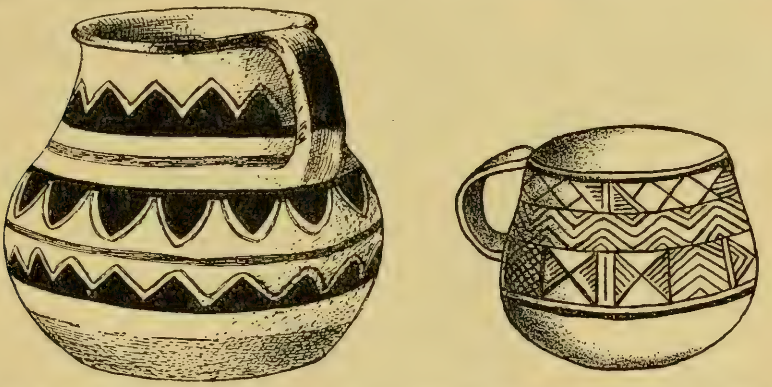


FIGURE 43.—South Andean pottery styles. *Left: Chiriguano* painted ware (black-and-red on yellowish white). *Right: Araucanian* black-on-white. (After Rosen, 1924, fig. 220; and Latcham, 1928, pl. 39.)

In the Central Valley of Chile, the territory of the *Araucanians*, there are painted styles (fig. 43, *right*) which are related to those of the north but which are, nevertheless, stylistically distinct. These do not bear style names, but are usually referred to simply as "*Araucanian*." In general, they are less developed than Chilean *Diaguita* or *Atacameño* pottery. From north to south, there is an obvious decline in excellence with a tendency for two-color ware to replace three-color. In the *Araucanian* region there are also sites which yield only plain or simple incised styles. The chronological relationships between these Crude or Simple level wares and the painted "*Araucanian*" styles has not been revealed.

Finally, it should not be overlooked that in North Chile, along the Coast, there is indisputable evidence of long preceramic occupations. These preceramic periods are, for the most part, preagricultural as well, but at Arica there is some evidence to support the thesis that agriculture preceded ceramics by a relatively short time. To date, North Chile is one of the few places in South America where the prepottery or Absence of Pottery level has been successfully isolated in a cultural sequence.

East of the Andean divide there are a number of pottery styles which show relationship to those of Chile. In the north, in the area of the *Chiriguano*, there is a painted style (fig. 43, *left*), of the Controlled level, which resembles the *Atacameño* pottery. In the same region incising, anthropomorphic modeling, and finger-impression techniques are also recorded, but their time relationship to the painted ware has not been clarified. To the south of the *Chiriguano* territory, on the Argentine Puna, and in the Quebrada de Humahuaca is another painted style which is related to the North Chilean and to the

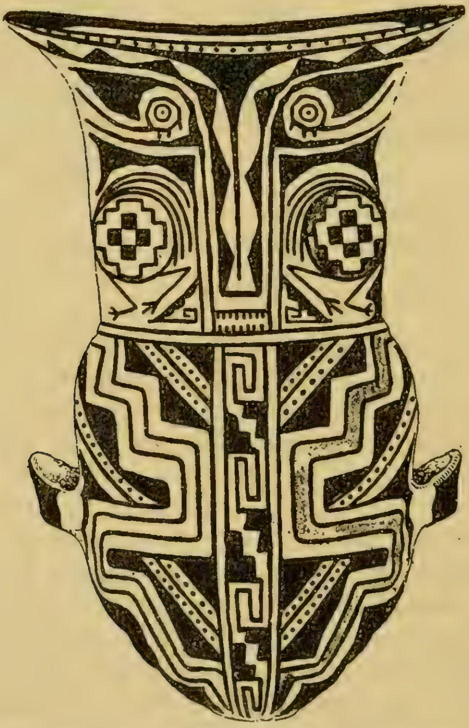


FIGURE 44.—Santa María painted style of the *Diaguita*. (After Márquez Miranda, 1939, fig. 7.)

*Chiriguano* black, white, and red styles. The regions of the Argentine *Diaguita*, the Chaco Santiagueño, and La Candelaria archeological cultures extend down the Argentine Highlands to the provinces of San Juan and Santiago del Estero. The dominant pottery throughout most of this country is painted in two or three colors and is about the developmental equal of the Chilean painted wares. The entire region is characterized by huge funerary urns which often bear anthropomorphic decoration executed in rather crude relief. *Diaguita* style includes the Santa Maria (relief and black-on-yellow) (fig. 44); Draconian (incision); Belén (black-on-red); and Los Barreales (white- or grey-on-black, red-and-black-on-yellow, and incised, fig.

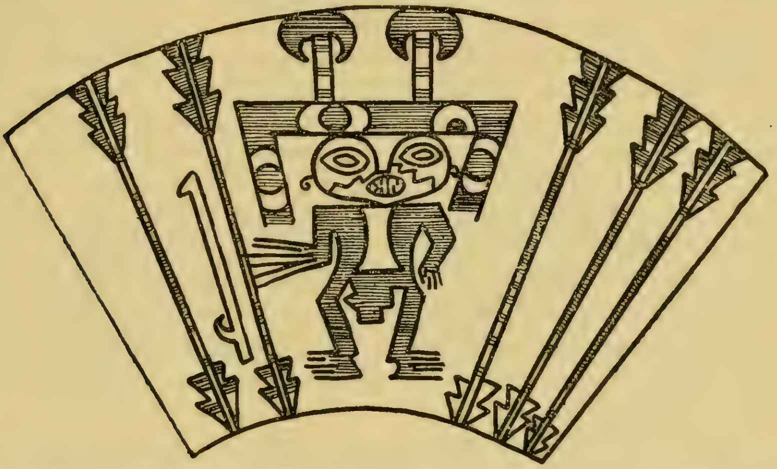


FIGURE 45.—Los Barreales incised design from vessel. (After Debenedetti, 1931, fig. 8; see bibliography, Handbook, vol. 2.)

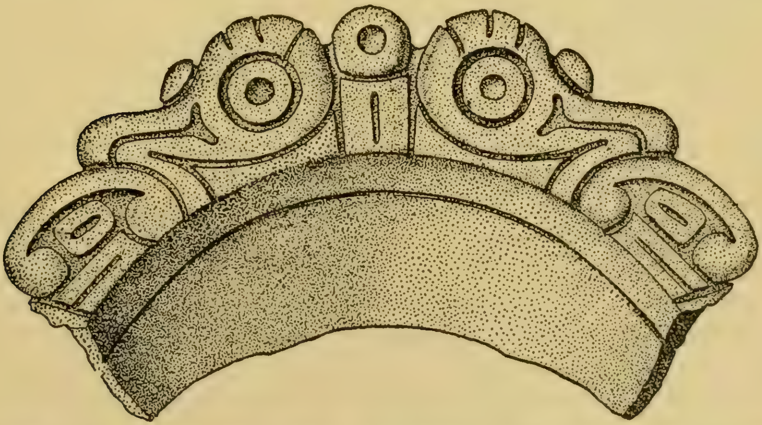


FIGURE 46.—Los Barrancas incised style rim sherd. (After Osgood and Howard, 1943, fig. 16; see bibliography, Handbook, vol. 4.)

45). Design may be either geometric or stylized naturalistic. Chaco-Santiagueño is closely related to *Diaguita.* La Candelaria wares, although still on the Controlled level, do not quite come up to *Diaguita.* La Candelaria painting is usually two-color; there is crude anthropomorphic relief and some life-form modeling; and much of the ware is decorated with incision. As yet, there is little evidence to arrange these Argentine styles into a relative chronology.

Lack of verifiable ceramic sequences for the South Andean Area makes it difficult to see what traditions or pottery lines were operative over long periods of time. In general, it appears as if the *Atacameño*-Arica, Chilean *Diaguita*, *Araucanian*, *Chiriguano*, Humuhuaca, Argentino *Diaguita*, Chaco-Santiagueño, and La Candelaria painted styles are mutually related and probably can be included in a single tradition. To go even further, this tradition is probably the same South Perú-Bolivian Polychrome tradition referred to in the discussion of Central Andean area. There may also be continuities and over-all relationship in the incised styles, such as those mentioned for central Chile and the Northwest Argentina. These southern incised styles may have distant relationships, in terms of a common ceramic tradition, to the Early Ancón-Supe style of Perú. It should be made clear, however, that a linkage of early Peruvian incised pottery with South Andean incised pottery rests very tenuously on a mutually possessed technique of surface treatment, whereas the Central to South Andean painted ware relationship is based upon some specific stylistic connections as well as techniques.

In general, the South Andean ceramic area is marginal to the Central Andean, and the stimuli for the more developed painted wares of the south were undoubtedly derived from Southern Perú and the Bolivian Highlands. It is also likely that the period of that derivation was the Central Andean major Middle, or Tiahuanacoid, Period. Previous to this wares of Simple or Crude level probably were in use in North Chile and Northwest Argentina. These unpainted wares may also be Central Andean in inspiration. Ceramic influences out of the South Andean area moved south as far as Mendoza, Argentina, and eastward for an unknown distance into the Argentine lowlands.

**The North Andean.**—This is a rich and diversified ceramic area and one whose historic complexity has not yet been untangled. Like the Central and South Andean areas, the outstanding pottery styles are all prehistoric. In the southern Ecuadorean Highlands, in Azuay and Cañar, there is a two-period ceramic sequence designated as Early and Late Cerro Narrío. The earlier period is marked by a fine Red-on-buff (pl. 40, *e*, *f*, *h*) and a polished red style; the later period has a coarse Red-on-buff style (pl. 40, *d*, *g*), tripod and compotera forms, clay seats, and, toward the close of the period, Chimu and *Inca* ceramic

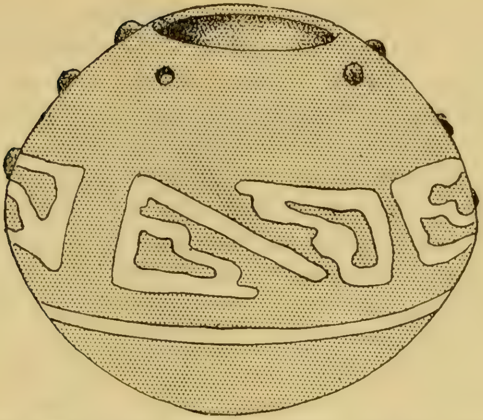


FIGURE 47.—Nariño White-and-red style. (After Bennett, 1944 a, fig. 10; see bibliography, Handbook, vol. 2.)

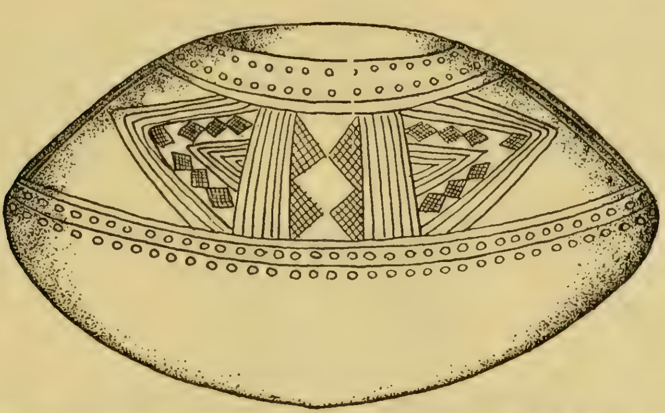


FIGURE 48.—San Agustín incised style. (After Bennett, 1944 a, fig. 3; see above)

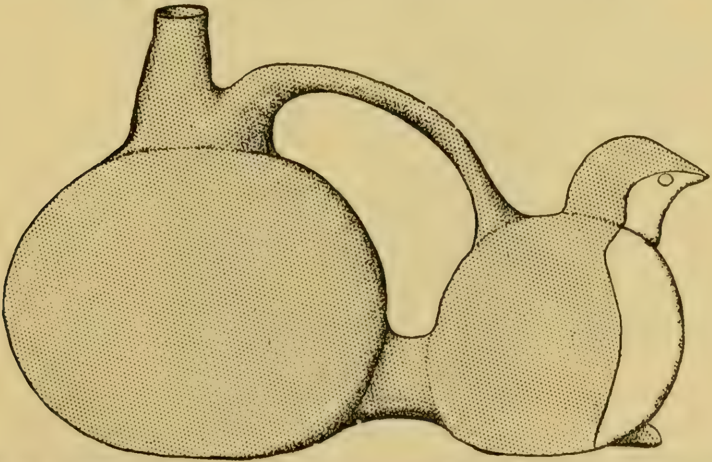


FIGURE 49.—*Quimbaya* Red-and-white style. (After Bennett, 1944 a, fig. 13; see above.)

influences from Perú. Further north, in Tungurahua and Chimborazo, there is a long sequence, only part of which is verified by stratigraphy, which begins with unpainted incised wares; runs through negative, overpainted negative, anthropomorphic modeling and incising, two- and three-color positive painting; and closes with incised styles and *Inca* influences. These sequence periods from Early to Late are: Proto-Panzaleo I (fig. 62, *left*), Proto-Panzaleo II (fig. 62, *right*), Tuncahuán (pl. 40, *a*), Guano (fig. 63, *left*), Elen Pata (fig. 63, *right*), and Huavalac plus *Inca*. All of the major styles of these periods are of the Controlled level, including the incised Proto-Panzaleo I pottery which includes such vessel forms as compoteras and tripods. The elaborative maximum is reached in Tuncahuán, especially in the overpainted negative compotera vessels. A three-period sequence in Imbabura has incised and two-color painted ware in the first two periods and only painted ware in the final period. Vessel forms are well developed in all three periods. On the Ecuadorean Coast, in Manabí and Esmeraldas, pottery figurines (figs. 58, 61), mold-made pottery, and clay seals or stamps are the outstanding ceramic accomplishments. The sculptured quality of some of this pottery is very close to Advanced standards, although the region has been indicated as Con-

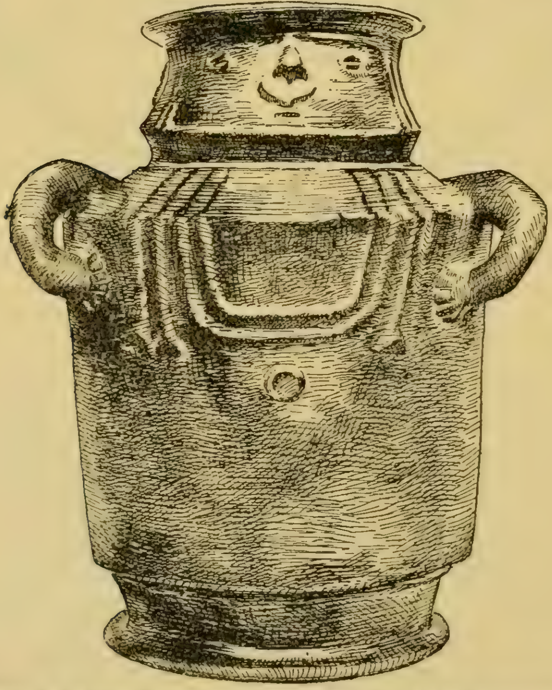


FIGURE 50.—Santa Marta or *Tairona* modeled urn. (After Bennett, 1944 a, fig. 25; see bibliography, Handbook, vol. 2.)

trolled on the distribution map (map 1). There is no sequence information available from the Coast of Ecuador.

In Colombia a number of ceramic regions are recognized, but sequences have not been worked out for the regions. A general chronology, based on inferential evidence, has been proposed which places the San Agustín (fig. 48) and Tierradentro (pl. 39, *f*) styles of the south as Early, Nariño (fig. 47) of the south and *Quimbaya* (pl. 39, *g;* fig. 49) of the central Cauca Valley as Middle Period, and the Upper Cauca styles (pl. 39, *d*), Santa Marta (fig. 50, pl. 35, *g*) and *Chibcha* (pl. 39, *a*), as Late. This Early, Middle, and Late division is believed to have a parallel contemporaneity to the similar divisions of the Peruvian chronology. The San Agustín pottery series, which probably comprises more than one style, emphasizes relief and incised decoration. Two-color negative and positive painting are also present. Tripods, tall pedestal vessels, and a variety of ollas, plates, and bowls are common vessel forms. Tierradentro, though stylistically quite distinct, is comparable in the use of incision and paint-filled incision, relief modeling of life forms, and two-color ware. Some Tierradentro pottery is reported as being cord-marked. Nariño and *Quimbaya* styles are much more lavishly decorated than San Agustín or Tierradentro. Nariño has three-color positive painting and negative with overpainting. Negative and overpainted negative are also characteristic of *Quimbaya.* In addition, *Quimbaya* styles include positive painting, incised wares, champlevé, relief and full-round modeling. There are some notable *Quimbaya* vessel forms such as double-vessels, whistling jars, double-spout jars with connecting bridge handles, and stirrup-spout jars. Late Period styles do not measure up to Nariño or *Quimbaya* in decorative excellence, but, like all of the other North Andean styles, they achieve the Controlled level. In the upper Cauca Valley most of the decorated pottery is incised or ornamented with appliqué. The great bulk of the material is rather crudely finished and plain, although the vessel forms include pedestal-based and handled ollas. *Chibcha* decoration is complicated, utilizing modeling, incision, and appliqué techniques and, occasionally, affixing pieces of metal to the vessel, such as ear or nose rings for a human effigy. Designs are rather simple and geometric. Much of the ware is monochrome but there is some two-color painting. Compared to *Quimbaya* modeling, *Chibcha* representations are awkward and crude. The Santa Marta or *Tairona* pottery resembles *Quimbaya* in some of the more complicated vessel forms. Most decoration is, however, by incision or modeled relief.

These few styles are apparently but a small portion of the ceramic development of prehistoric Colombia. Glimpses of materials from relatively unexplored regions show styles with little or no relationship

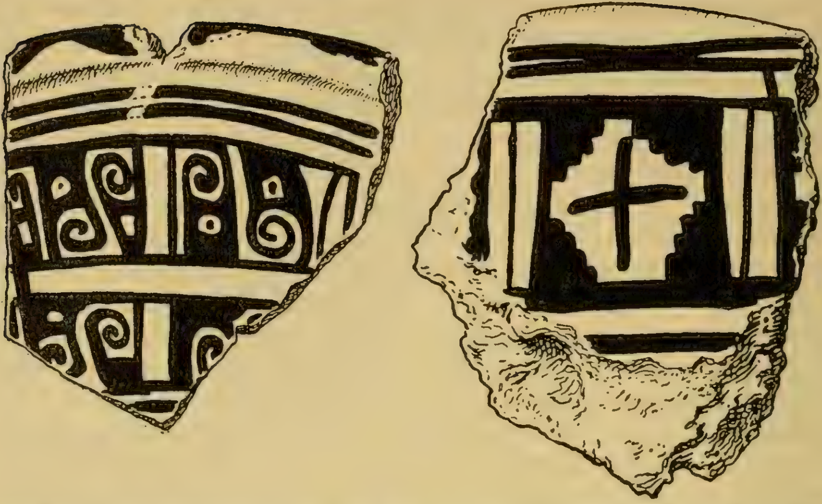


Figure 51.—Painted sherds from the Mojos region, eastern Bolivia. *Left:* Lower Velarde style. *Right:* Upper Velarde style. (After Nordenskiöld, 1913, figs. 77, 85.)

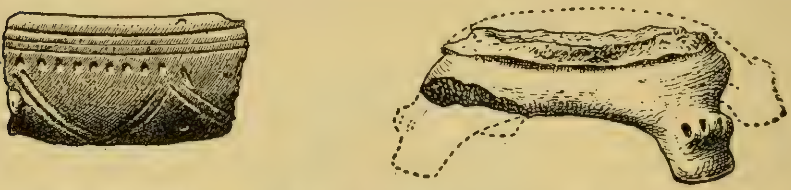


Figure 52.—Pottery from the Mojos region, eastern Bolivia. *Left:* Incised sherd from Mound Masicito. *Right:* Tetrapod of the Lower Velarde period. (After Nordenskiöld, 1913, figs. 143, 67.)

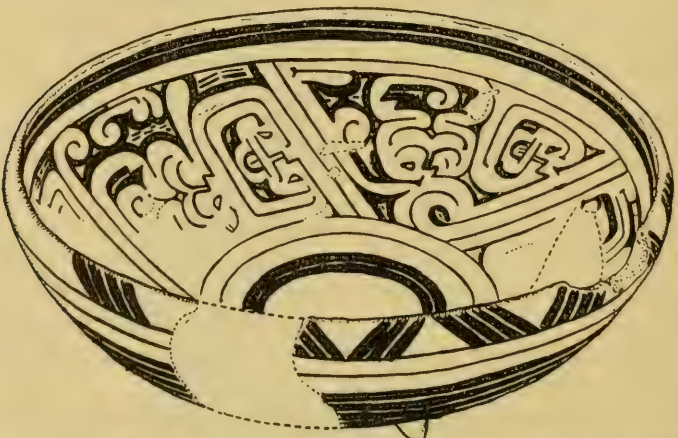


Figure 53.—Painted vessel from the Mojos region, eastern Bolivia, Mound Hernmarck. (After Nordenskiöld, 1913, fig. 123.)

to those discussed. On the Sinú River, in northwestern Colombia, there is a little-known high-relief modeled style (pl. 39, *e*) executed with unusual skill. Another example is pottery from the Mosquito district on the middle Magdalena, between the *Chibcha* and Santa Marta country. Here there are elaborate modeled urns (pl. 39, *b*) suggestive of some of the Amazonian styles.

The extra-areal relationships of the North Andean area appear to be much more complex than those of the South Andean. There are a number of features which are referable to Perú. Specifically, there is *Inca* and Chimu style influence in the Ecuadorean Highlands. Peruvian influence of a more generalized sort is seen in the double-jars, whistling jars, stirrup-spouts, and double-spout with bridge-handle jars of *Quimbaya* and Santa Marta. Other technical ceramic traits are held in common by the Central and North Andean areas, although the direction of movement of such traits is not known. Negative painting is such a trait. A common participation in a North Andean negative-painted tradition by Ecuadorean Tuncahuán, Colombian *Quimbaya* and Nariño, and Peruvian Recuay is certainly suggested. Ecuador seems to be the center of intensity for the Negative tradition, but comparative time relationships for the three countries have not been worked out sufficiently to help in the matter of origins. Tripods, pedestal bases, and compoteras seem to center in Highland Ecuador or Colombia and from there to have spread south into the North Highlands of Perú. The competent use of molds in making both pottery and figurines is shared by the North Peruvian Coast and by the Ecuadorean Coast. In the Mochica style the Peruvians took this technique to greater heights of achievement, but the development of the mold may be Ecuadorean.

To the north and east, Colombia ceramic influences were undoubtedly felt in Central America and in Venezuela from whence return influences were also probably operative. A mutual reliance upon relief modeling, appliqué, and incision for the decoration of monochrome pottery links lower Central America, certain areas and/or periods in Colombia, and Venezuelan styles. The Andean section of Venezuela also discloses very definite Colombian-Ecuadorean relationships in the possession of tripod bases and pedestal jars.

**The Venezuelan.**—On the lower and middle Orinoco River and at Lake Valencia in north central Venezuela there is an Early ceramic period possessing a number of features in common. The pottery of this period is characterized by polished monochrome ware decorated with deep, wide, round-bottomed incised lines (pl. 35, *a*, *c;* fig. 46). The incised designs are complex, highly conventionalized, and competently executed. Biomorphic adornos are associated. Plates, bowls, and griddles are common forms. There are some regional differences

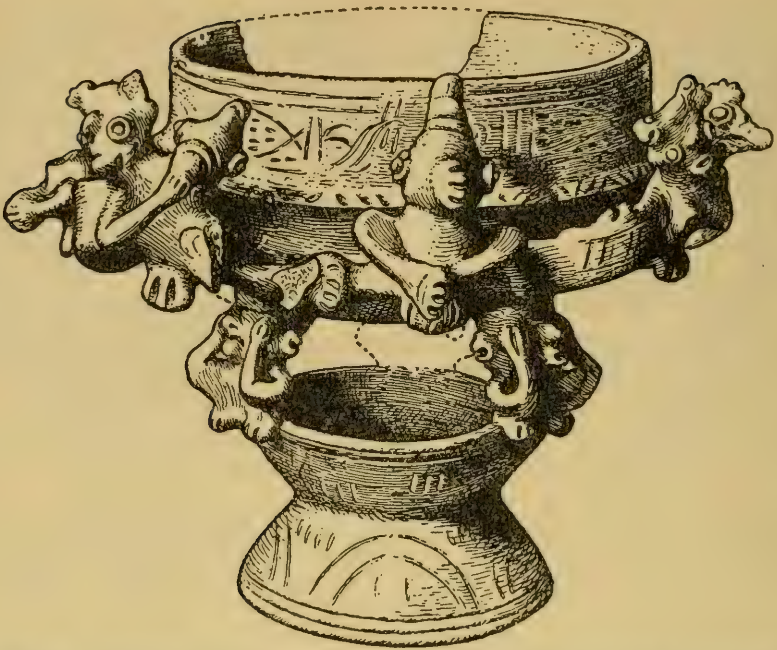


FIGURE 54.—Santarém incised and modeled style. (After Palmatary, 1939, fig. 2; see bibliography, Handbook, vol. 3.)

in the ceramics of this Early Period. For instance, a two-color red and white ware is present only on the middle Orinoco, and low-relief modeling and double-spouted jars are found solely in the Early Period at Lake Valencia. The middle Orinoco and Lake Valencia Late

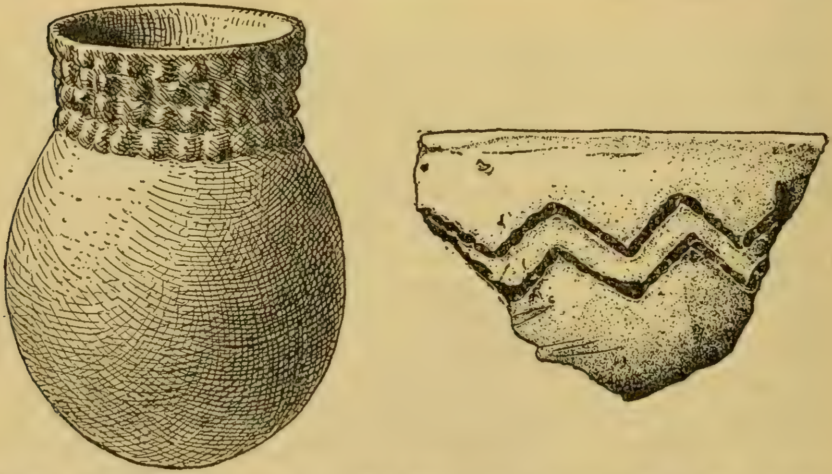


FIGURE 55.—Pottery of the Southern area. *Left: Choroti* noded ware. *Right:* Linear-punctated sherd of the Argentine Pampa. (After Rosen, 1924, fig. 126; and Lothrop, 1932, pl. 23.)

Periods are both characterized by thin-line incision and punctuation (pl. 35, *b*), but there are also regional differences such as the appearances of figurines in Late Lake Valencia (pl. 35, *e*) and their absence on the middle Orinoco. All of this pottery belongs on the Controlled level.

On the northwest coast of Venezuela no full sequence has been found, and a linear painted style, done in one to three colors, predominates. This style of painting bears some resemblance to the Coclé and Chiriquí styles of Panamá. Annular, ring, and tripod bases, and elbow smoking pipes also characterize the northwest coast. Besides painting, incision, appliqué, corrugation, and net-marking techniques are recorded for the northwest. It may be that some of these simpler decorative techniques represent a ceramic period separate from the painted ware. This is suggested on the Paraguana Peninsula where net-marked increases over painted in the upper levels of one site.

The pottery of the northeast coast is either plain, crudely modeled, or incised ware of the Simple level. Bowls, wide-mouthed jars, and griddles are typical forms. For the upper Orinoco and the llanos only drab burial urns and fabric-impressed sherds have been reported. The information for all of this vast interior territory is, however, minimal.

In the Venezuelan Andes there is, again, Controlled level pottery. Western influences are evident in tripods and special-based vessels, and cursive style painting suggests the Andean areas. Incision, punctation, and appliqué techniques are also present. Standing and seated human figurines, painted with linear designs, are abundant and typical (pl. 35, *d*).

As is evident, time relationships of Venezuelan ceramics have been revealed in only a few places, and it is difficult to visualize the pottery continuities of the area. One tradition, or continuity, does stand out. This is the Orinoco Plastic tradition. It is seen in the flowing incised style of the Early Orinoco Periods, in the Late styles of the West Indies, and on the lower Amazon. Designs are curvilinear and conventional, and biomorphic adornos are typically associated.

The red and white pottery of the Early Period of the middle Orinoco, not of the Plastic tradition, bears resemblances to West Indian painted styles and some of those of the lower Amazon. Other Venezuelan styles have western rather than eastern relationships. It has been mentioned that pottery of Andean Venezuela is reminiscent not only of Colombia but of the Central Andean area. Northwestern Venezuela shows Andean and also Central American reflections.

**The Antillean.**—The earliest pottery in the West Indies appears to be the Controlled level White-on-red style of the Lesser Antilles and of Puerto Rico. In Puerto Rico this style or type is referred to as the Cuevas (pl. 34, *g*). Its affiliations seem to be with the red and white

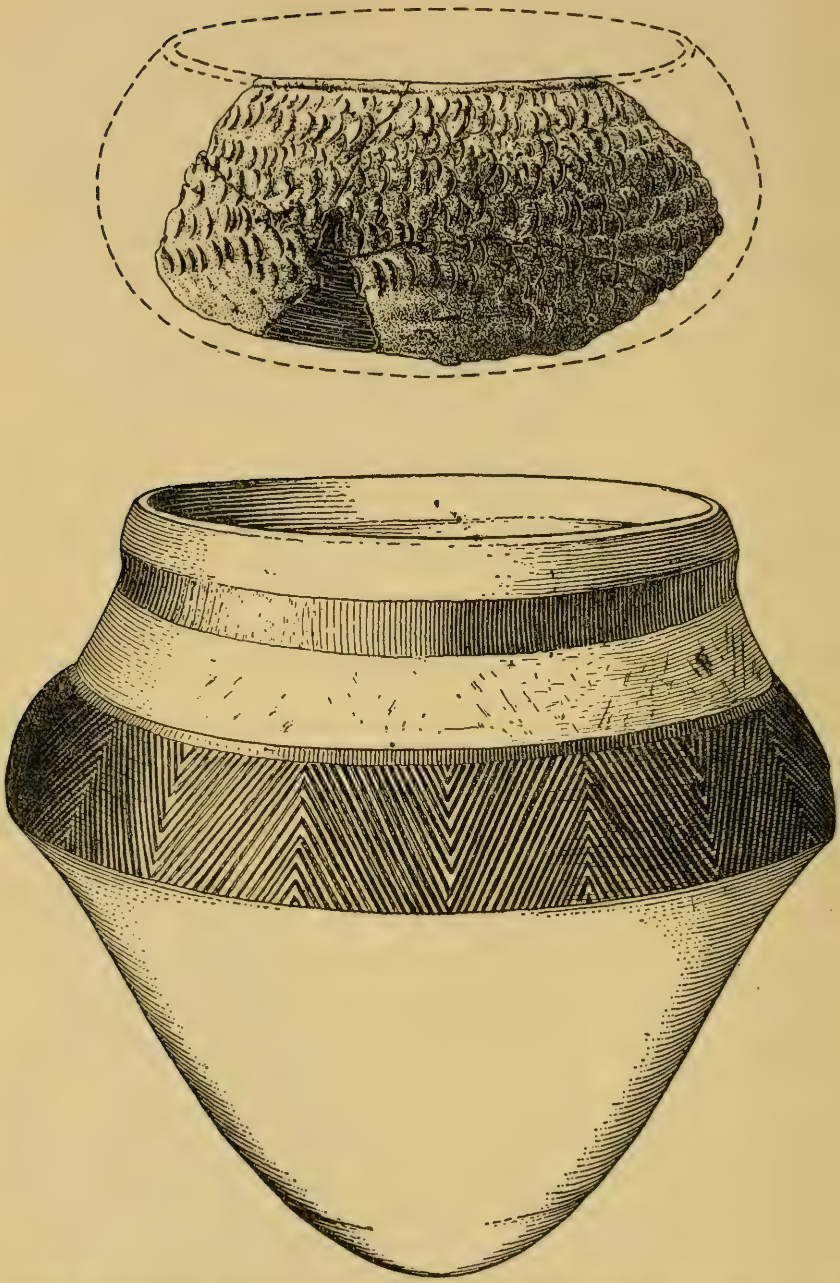


Figure 56.—*Guaraní* pottery. *Top:* Fingernail-marked ware. *Bottom:* Painted (black and red) urn. (After Lothrop, 1932, pls. 7, 10.)

pottery noted in the Early Period of the middle Orinoco zone of Venezuela. In Puerto Rico the Cuevas style is replaced by two contemporaneous but areally separate styles, the Santa Elena and the Ostiones. The painting of these latter styles is simpler, usually being in one pigment only, but it is combined with Controlled level incising and modeling. Subsequently, the Capá (pl. 34, *e*) and Esperanza styles replace the Ostiones and Santa Elena. These later styles place emphasis upon deep, round-bottomed incising.

The Capá and Esperanza styles appear to be Puerto Rican variants of a widespread West Indian style horizon. This horizon is represented in Haiti and the Dominican Republic by the Carrier (pl. 34, *c*, *d*, *f*, *h*) and Boca Chica styles and on the extreme eastern tip of Cuba by the Pueblo Viejo style. This deep-line incised style is the best known and most commonly illustrated pottery of the Antilles, and it has often been referred to as *Tainan* ware. In addition to the deep incised lines arranged in curvilinear designs and the zoomorphic adornos, other characteristic features of Carrier and related styles are boat-shaped bowls, griddles, and an unusual bottle shape. Modeled-incised material is also reported for Trinidad and the Lesser Antilles where it overlies the White-on-red style. In my opinion, all of these styles are related to the middle and lower Orinoco Early Periods and West Indian incised and modeled are a part of the Orinoco Plastic tradition.

On Hispaniola there appears to be no horizon comparable to the typical White-on-red Cuevas of Puerto Rico, although finds of a late Cuevas-Early Ostiones type are found. The principal pre-Carrier style is an incised and appliqué style known as the Meillac (pl. 34, *a*, *b*). Meillac decoration is decidedly inferior in conception and execution to Carrier, and Meillac has been grouped with the Simple level ware. The origins of the Meillac style may be local West Indian as related styles have not been found in northern South America.

Meillac is the only style found in Jamaica, and a comparable style, the Baní, is known from central and eastern Cuba. Both Meillac and Carrier ceramics have been found in the Bahamas.

**The Amazonian.**—Several major pottery styles have been described for the lower Amazonian drainage although there is little or no historical information concerning them or their relationships to each other. At some sites associated European trade objects indicate that occupation continued into post-Columbian times.

Perhaps the best known ceramic style is the Marajó, centered on the island of the same name at the mouth of the Amazon. Marajó is a painted pottery (pl. 36, *c*) which also incorporates relief modeling, incising, and champlevé cutting. Hollow human figurines, modeled in the round, are a common pottery artifact as are pottery "tangas" or fig-leaf pubic covers for women. Jars, bowls, plates (both oval and circular), annular-based bowls, and anthropomorphic and compound funerary urns are the principal Marajó vessel forms. Painting is usually in red or brown on a light orange, white, or red slip. Slipped ware is often incised and the incisions are sometimes filled with darker pigments. Relief modeling is usually anthropomorphic. Incised and painted design is either geometric or very stylized anthropomorphic. Rim adornos, usually animal heads, are also used for ornamentation.

Another important style is the Maracá of the Atlantic Coast above the Amazon Delta. Decoration is in red and gray or red and yellow, but anthropomorphic modeling is the most striking characteristic of the style. Effigy jars depict hollow-bodied figures seated on benches. Resemblances to Marajó are seen in geometric designs, and the joining of eyebrows to nose in anthropomorphic faces. The presence of European trade objects indicate that the Maracá style was flourishing in post-Columbian times.

Santarém, or Tapajó, pottery centers around Santarém at the mouth of Tapajóz River, 300 miles up the Amazon from Marajó. The Santarém style extends up the Tapajóz to Aramanahy and is represented by numerous inland sites on the right bank. It is found as far east as Taperinha and Bocca de Coaty on the Rio Jaraucu, a tributary of the lower Xingú. Santarém-like ceramics have also been found as far west as the Serra de Parintins and as far north as Monte Alegre. While Marajó features painting, Santarém is outstanding for its unusual modeling (fig. 54). The Santarém plastic treatment is principally adornment. Vessels are literally covered with zoomorphic effigies. Deep, broad-line incision is also typical. Vessel forms are often very bizarre, running to unusual pedestal shapes and caryatid bases. Painting is present (red and black on light background) but not stressed.

There are other Amazonian styles, or rather occurences of pottery about which so little is known that few of them have been thought of

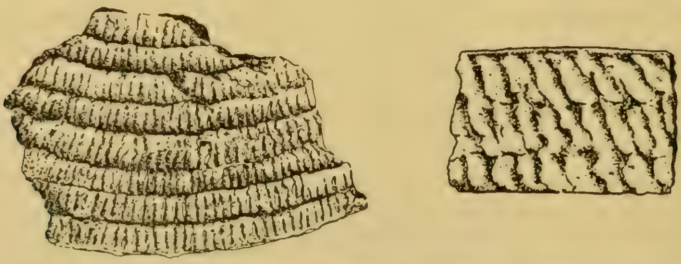


Figure 57.—Thumb-marked corrugated pottery, *Guaraní*. (After Lothrop, 1932, pl. 5.)

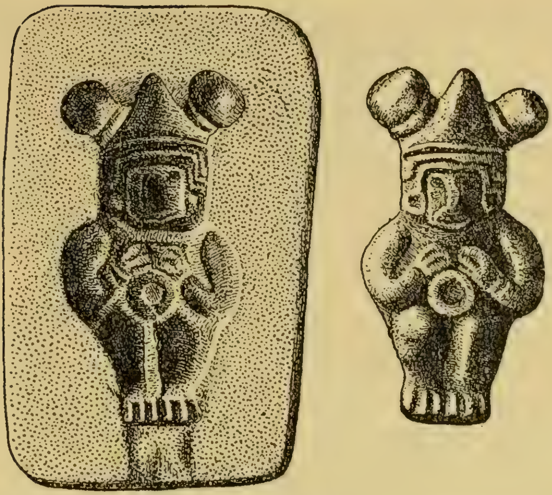


FIGURE 58.—Ecuadorean figurine mold and figurine. (After Saville, 1910, fig. 77.)

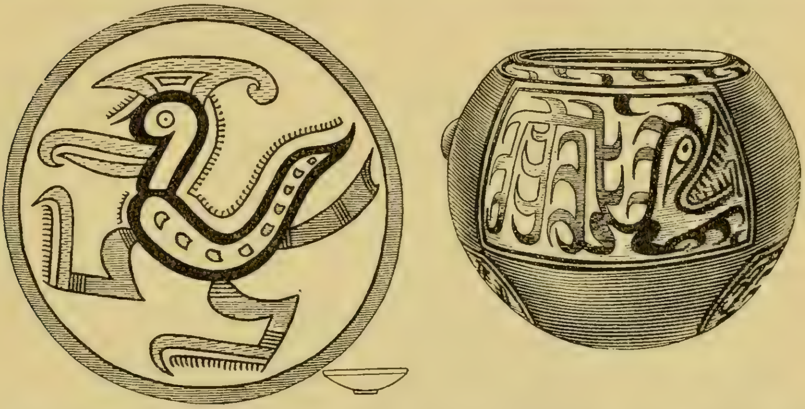


FIGURE 59.—Coclé painted ware. *Left:* Early Polychrome style. *Right:* Late Panelled Red style. (After Lothrop, 1942, figs. 81, 342.)

as styles. The lower Xingú is rich in plastic adornment recalling the Santarém style. The middle Xingú pottery is a little less decorative although incised and modeled. On the middle reaches of the Amazon, red-on-white anthropomorphic funerary urns are known from near the mouth of the Madeira. Near Manoas there is a brown funerary ware painted with rather simple black designs. Incised pottery is also known from the same general location. Teffé pottery shows similarities to both Santarém and Marajó, and on the Japurá River there are white-slipped, incised burial urns. Farther up the Amazon and its major tributaries of the Montaña are polychromes some of which bear design similarities to Marajó. The most distinctive of this pottery is known ethnographically among the Ucayalí River *Panoans* and other Montaña tribes. It can tentatively be designated as Ucayali Polychrome (pl. 36, *a*, *b*). The slip is cream, and the decorations red and black. Designs are geometric, and the resemblances to Marajó are to the linear motifs in that style, not the anthropomorphic elements. There is no incision or relief modeling to emphasize the design, which is nearly always carried out in widely spaced, heavy lines which are outlined with one or more thin lines. Also in the Montaña are less distinctive two- and three-color styles.

In the northwest Amazon region the *Witoto*, the *Peban* tribes, and the people of the Uaupés-Caquetá region made painted pottery, usually red and black with rather simple designs. Back away from the principal montaña rivers the tribes generally made Simple rather than Controlled level pottery. These less-developed wares were monochromes, fingernail-impressed, or punctated styles.

There is one other region which should be considered in the Amazonian area, and about which there are relatively ample data. This is the Mojos section of eastern Bolivia on the Madeira tributaries, the Mamoré and Ivari Rivers. The best-known site in this region is the Velarde Mound near Trinidad. There are two periods at Velarde, and the ceramics of the earlier period (fig. 51, *left*) are distinguished by painted decoration (geometric), tetrapodal supports (fig. 52, *right*), modeled rim lugs, and seated female figurines. The Upper Period differs from the Lower in having tripod vessels, a somewhat different painted decoration type (fig. 51, *right*), burial urns, and standing clay figurines. Although both Velarde Periods are distinguished by distinctive styles, the painted designs slightly resemble lower Amazonian and northeast Brazilian coastal pottery. On the other hand, neither period resembles Andean pottery, which extends eastward from Highland Bolivia but, apparently, does not come as far as Mojos. The Hernmarck Mound, in the same region, has a different style of pottery whose relationships are not so difficult to place. Hernmarck painted ware (fig. 53), although a separate style, has close resemblances in design elements to Amazonian Marajó pottery. Hernmarck is considered to be slightly later than the Upper Velarde Period. Another major mound, Masicito, is characterized by incised (fig. 52, *left*), appliqué, and modeled pottery and zoomorphic tripod feet. Masicito is also considered, on inferential evidence, to be later than Upper Velarde.

In summary, we can discern what appear to be two major pottery traditions on the Amazon. One, the Santarém or Tapajó, might be reasonably considered as another stylistic expression of the Orinoco Plastic tradition. Certainly, the Santarém and lower and middle

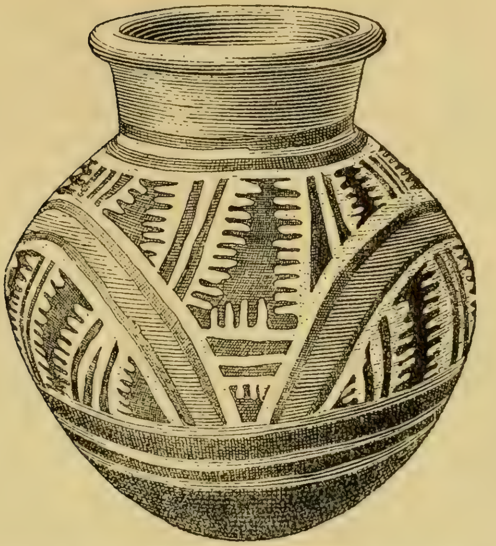


Figure 60.—*Chiriqui* negative painting. (After MacCurdy, 1911, fig. 18.)

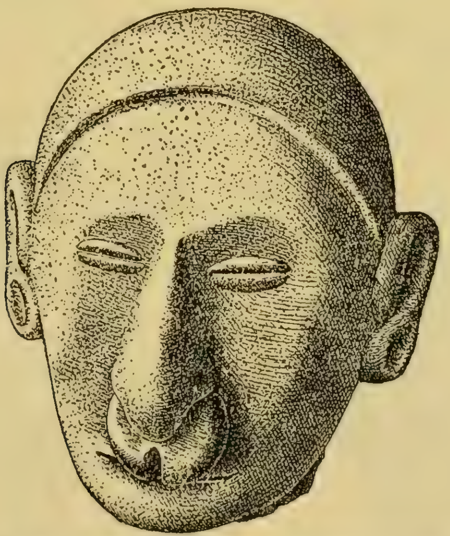


Figure 61.—Figure head, Ecuador. (After Saville, 1907–10, pl. 91.)

Orinoco deep-line incised styles seem to be related. Santarém does, however, diverge considerably in the direction of ornate modeling. The other major Amazonian tradition, at least at this stage of knowledge, is represented by the Marajó and related painted styles. Some archeologists have pointed to resemblances between Marajó and Red-and-white pottery styles of the Orinoco and the Antilles. Possibly, all of these styles could be combined into an Amazonian Painted tradition.

With the exception of the stratigraphy at Mount Velarde in the Mojos, there is no relative sequence for the Amazonian styles. Not even the relative time positions of the Marajó and Santarém styles, with relation to each other, are known. Both appear to have been pre-European, however, while the coastal Maracá material was, at

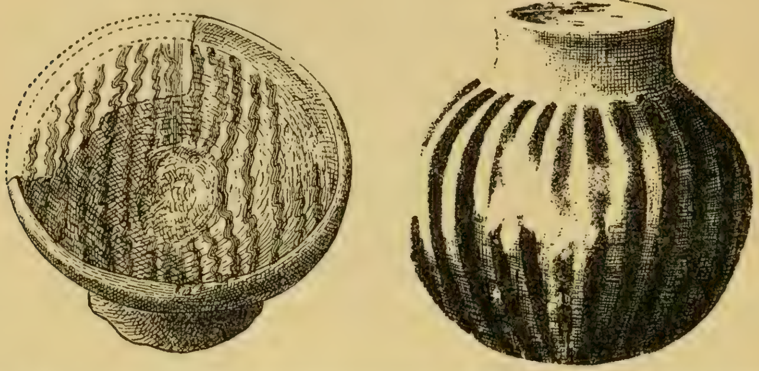


Figure 62.—North Andean pottery styles from Ecuador. *Left:* Proto-Panzalo I. *Right:* Proto-Panzaleo II. (After Jijón y Caamaño, 1927, pls. 10, 12.)

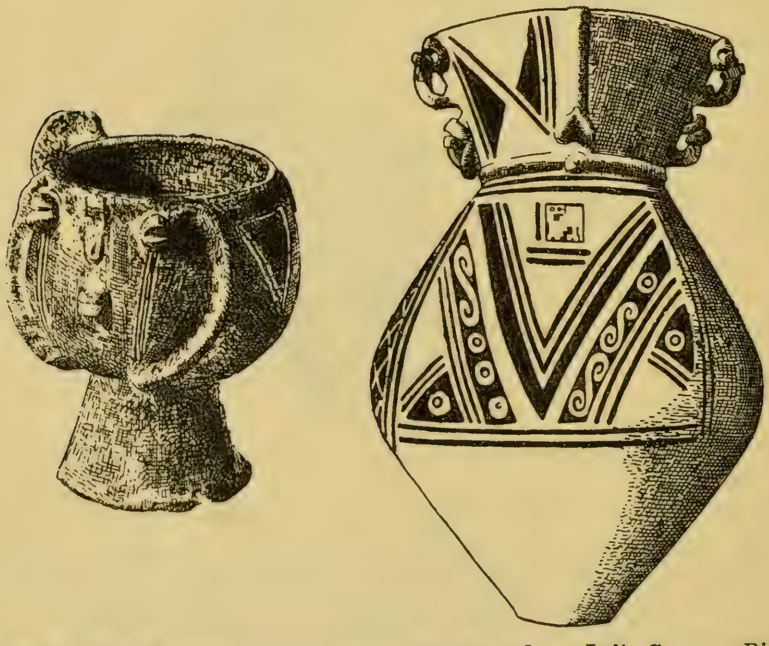


Figure 63.—North Andean pottery styles from Ecuador. *Left:* Guano. *Right:* Elen Pata. (After Jijón y Caamaño, 1927, pls. 46, 53.)

least in part, coextensive with European contact. In general, it is clear that the big villages of pottery-making peoples of the lower Amazon were deserted at the time of, or very shortly after, the Contact Period. Today there are either no pottery-making tribes on the lower or middle Amazon, or the people who live there manufacture ceramics inferior, especially in adornment, to those made in the same country in prehistoric times. One exception is the upper Amazonian Montaña country, where relatively fine Controlled level pottery is still being made. What the earlier ceramics of this Montaña region may be is as yet unknown for lack of archelogical research.

Amazonian area pottery relationships are clearly with the Venezuelan area as indicated. There are undoubtedly affiliations south into the East Brazilian area and the Paraná drainage. In the west, there seem to be few ties into the Andes. Although Tropical Forest relationships to the Peruvian Chavín style have been claimed by some authorities, the evidence for this has never been presented. In the eastern Bolivia zone, geographically intermediate between lowlands and highlands, there is a mixing of ceramic influences. Some of the lowland influences may be Amazonian; others appear to be derived from the Paraná River region. The time relationships of the Andean-lowland contacts in eastern Bolivia have been estimated by Bennett (1936) as follows: The Early Period at the Velarde mound is equated with Derived Tiahuanaco and Late Velarde with Decadent Tiahuanaco. Incised wares, modeled burial urns, and fingernail ware is thought to be about contemporaneous with Late Velarde and Decadent Tiahuanaco. *Inca* influences in the region terminate the sequence. Such style equations are still very tentative.

**The East Brazilian.**—There is very little information on the ceramics of the East Brazilian area. In general, the pottery of the interior of eastern Brazil belongs to the Crude level as opposed to the Amazonian pottery to the north and west, which is principally of the Controlled level. It is, of course, possible that Simple or even Controlled level ceramics will eventually be discovered in the interior Brazilian area; but as yet, they have not been brought to light.

Serrano (Handbook, vol. 1, p. 407) states that in the earliest or Archaic Phase of the Brazilian coastal shell heaps (sambaquís) there is no pottery. In the sambaquí Middle Phase sites, near Rio de Janeiro, only plain pottery is reported. Southern Phase sites in Rio Grande do Sul, Santa Catalina, Paraná, and São Paulo, show fingernail-impressed ware similar to that of the *Guaraní* and probably attributable to them. Finally, the painted *Tupinamba* pottery of the coast is much finer than any in the area. Here, then, is a possible sequence running from prepottery, through plain, fingernail-impressed, and Controlled painting. Such a sequence has not, however, been substantiated by stratigraphy.

The historic *Tupinamba* pottery of eastern Brazil is a two- or three-color ware, and it is closely related to the *Guaraní* pottery of Paraguay. The painting is red, black, and white; the decorative motifs are linear; and the ware is given a final resin glaze. Bowls, dishes, vases, and huge chicha jars are the forms. The corrugated or fingernail-impressed ware is found in association with the painted and was made at the same time by the same people.

Influences out of the East Brazilian area can be clearly seen overflowing into the Southern area, specifically into the Paraná drainage. These ceramic influences are mainly encompassed by the two *Tupinamba* or *Guaraní* styles, the painted (fig. 56, *bottom*) and the fingernail-impressed ware (fig. 56, *top*). There are also the possibilities that incising and modeling techniques, which are common on the Paraná, derived from either the East Brazilian area, or the eastern Bolivian lowlands.

Influences into the East Brazilian area, as far as the *Tupinamba* and *Guaraní* ceramics are concerned, must have come out of the lower Amazon. Judging from known pottery distributions, it seems most likely that these painted potteries stimuli moved down the Brazilian coast rather than through the interior Highlands.

**The Southern.**—There are three chief pottery styles on the Paraná, a painted ware, a fingernail-impressed or corrugated, and a Paraná River incised and punctated style. The first two are *Guaraní* origin, and represent the afore-mentioned *Tupí-Guaraní* expansion out of southern Brazil. Because the *Guaraní* are known to have been relatively late comers into the south, there is reason to believe that the painted (fig. 56, *bottom*), corrugated (fig. 57), and fingernail-impressed (fig. 56, *top*) wares are later than the incised and punctated Paraná River style. This Paraná style is closely related to the pottery of the Pampas and Patagonia, and, as far as is known, it represents the old ceramic hearth of the Paraná drainage and the south. Much of it is plain and unslipped. Those pieces which are decorated may be incised, punctated, or ornamented in a distinctive linear-punctation or "drag-and-jab" technique (fig. 55, *right*). Red pigment is sometimes used on the unslipped surface in conjunction with incisions. Designs are principally rectilinear and quite simple. Vessels are usually subglobular bowls. In association with the Paraná style are occasional zoomorphic adornos, usually animal or bird figures (pl. 36, *d*). Separate figurines were also manufactured. These adornos and figurines are more common along the middle and upper courses of the Paraná River, and are found with less frequency as one moves from north to south.

Westward, in the Pilcomayo, Bermejo, and Paraguay drainages, the *Guaraní* ceramic influence is seen in fingernail-impressed or noded (fig. 55, *left*) ware. There is another style, however, which is described as quite different from any of those of the southern area. This is an unslipped, Simple level ware decorated with cord impressions and, sometimes, zones of red and black paint. This Chaco type, made by the *Mbayá*, *Caduveo*, and other neighboring groups may be the continuation of an old local development; or, on the other hand, it may be the result of contact with the *Guaraní* or the incised-pottery makers of the Paraná.

South of the Chaco and west of the Paraná, in the *Comechingón* region of the highlands of Córdoba, and in the adjacent lowlands of Córdoba and San Luis, there are two kinds of pottery decoration. One is incised, punctated (pl. 36, *f*), or linear-punctated; the other net- or textile-impressed (pl. 36, *e*). The incised and punctated types are very similar to the Paraná incised and punctated style, but the fabric-impressed pottery seems to be in a local tradition of its own.

Throughout Uruguay, the Argentine Pampas, and Patagonia, pottery is incised and punctated (pl. 36, *g*); the designs are rectilinear and crudely drawn; the vessel forms are simple open or subglobular bowls, and the quality of the ware is rather crude. Red pigment is found in the northern edge of the Pampas but does not appear farther south. In general, as one goes south the Pampean and Patagonian wares are less like those of the Paraná, less well decorated, and less abundant.

Stratigraphy or sequence information is virtually nonexistent for the Southern area. It is thought that most of the pottery styles were relatively late, being either barely prehistoric or historic in date; however, their temporal relationships to each other have not been worked out. As mentioned, it has been presumed that the *Guaraní* ceramic influences were somewhat later to the area than the others. It is clear that these *Guaraní* influences were northern, probably coming in from the Brazilian coast and extending as far down the Paraná River as the Delta. Just what other pottery influences were operative in the Southern area is not clear. The pre-*Guaraní* incised and punctated pottery may be a local development, possibly stimulated to a greater or lesser degree by pottery influences from the Amazonian area which arrived prior to the *Guaraní* invasion. If so, such comparable ceramic horizons have not yet been described for Brazil. It is also possible that the old ware of the Paraná contains some early Andean elements, although here, too, there is no proof of such an early infusion.

Whatever the time relationship or points of origin, four, or possibly five, separate pottery traditions can be factored out of the Southern area styles. First, there is the *Guaraní* polychrome, which can be considered a part of the Amazonian Painting tradition; second, there is the *Guaraní* Fingernail-impressed tradition; third, there is the Paraná Plastic tradition, made up of the Paraná, modeled, incised, and punctated style and the incised and punctated wares of the far south; fourth, there is the Córdoba Textile-impressed tradition; and a possible fifth is the painted and cord-impressed pottery of the Chaco.

**The Central American.**—There is little sequence information in the lower or southeastern portion of Central America although the wide variety of ceramic styles in this region suggests temporal differentiation which has not yet been demonstrated. Panamá has been divided into a number of archeological subregions, and these divisions are, in large part, formulated upon pottery styles. The area between the Panamá Canal and continental South America is known as Darién. Certain styles are localized to the Darién region, but they have affiliations both to the north and the south. Incising, modeling, and filleting are common decorative techniques, and complex vessel forms, such as annular-based jars, are present (pl. 38, *f*). On the Pearl Islands, which are a part of the Darién region, there is a suggestion of sequence in a horizontal stratigraphy which isolates incised pottery of much the same sort as that found on the Isthmian mainland from a polychrome style which has generic resemblances to Nicaragua, Costa Rica, and the Panamanian Coclé area.

Above Darién, the Coclé zone is located in the Pacific watershed just southwest of the Panamá Canal. Coclé is a region of unusual ceramic development, and the Coclé polychrome styles (fig. 59) have been recognized as belonging to the Advanced, rather than the Controlled, level of development. The polychromes are usually of three or four colors, with black, brown, dark red, light red, purple, and green being the common shades. Decoration motifs center around composite beasts or monsters, and there are also geometric patterns, particularly scrolls, of many varieties. The Coclé polychrome horizon has been broken down into early and late divisions, but the stylistic unity of all of Coclé polychrome and painted ware is very strong. There is some incised and filleted pottery in the Coclé zone which resembles both Darién and Chiriquí and is of the Controlled level. Probably, although not conclusively, this simpler pottery is earlier than the Coclé polychrome.

Between the Coclé and the Chiriquí regions is the Veraguas section, which has incised and filleted styles of its own. There are some contacts with Coclé and with Chiriquí ceramics. Veraguas vessel forms include effigy bowls and tripod bowls.

The Chiriquí zone shows relationships to Costa Rica as well as to the east. Modeled relief ware, negative painting (fig. 60), two- and three-color wares of a much simpler sort than Coclé, monochromes, pottery figurines, and clay whistles are all typical.

In Costa Rica and Nicaragua the monochrome incised and filleted wares, similar to those of lower central America, and particularly Chiriquí, are fairly common throughout. Designs are geometric or life forms, and effigy vessels or modeled adornos are present. Relatively simple one- or two-color painting is sometimes combined with the incised and plastic techniques. From the Nicoya Peninsula to Fonseca Bay, on the Pacific slopes, is the center of Nicoya Polychrome (pl. 38, *g*), an elaborate painted style of the Advanced level. Nicoya is usually three-colored and features pear-shaped effigy jars, annular bases, tripods, and geometrically conventionalized modeled and painted turkeys, macaws, monkeys, crabs, jaguars, alligators, and humans. In excellence of painting, brightness of color, black outlining of figures, and life motifs it resembles Coclé polychrome. Other less developed painted wares both in the Pacific drainage and in the highlands show strong Nicoya influence. In the highlands, besides the plastic monochromes and Nicoya-influenced painted styles, negative painting appears, probably as a result of Chiriquí contact. A number of noncontainer forms are found in the highlands, including hollow cylindrical potstands, incense burners, large heads, whistles, rattles, drums, and cylindrical stamps.

In Honduras the situation appears more complicated as the Central America cultures merge into the Mexican and Guatemalan peripheries. Along the northeast coast and Bay Islands region there are several styles, or style groups, including a North Coast Appliqué style (pl. 38, *d*) which embraces modeling, incision, and some painting. The vessel forms of this style include annular and tripod bases, shoe-shapes, boat shapes, effigies, handled vessels, and effigy tripod vessels. In the same region there are a number of other prominent styles such as Plumbate, Ulua Bold Geometric (pl. 38, *e*), Ulua Mayoid (pl. 38, *h*), and Bay Island Polychrome. These last three are polychromes, some showing relationships to "Old Empire" *Maya* polychromes of the north. It is presumed that some of the monochromes of the region are earlier than these polychromes. On the Ulua River and around Lake Yohoa a late Naco style is preceded by Ulua Mayoid and Ulua Bold Geometric. These Mayoid polychromes and a Mayoid sculptured and incised style achieve the Advanced level while all other Honduran styles are Controlled. There is also a stratigraphy in the Ulua-Yohoa sector which reveals the Ulua Bichrome (pl. 38, *b*) and the Playa de los Muertos Monochrome (pl. 38, *c*) styles as anterior to the Mayoid periods. These monochromes are Controlled level styles. The Ulua Bichrome style actually includes monochrome wares which are incised and rocker-stamped as well as the two-color red and black (negative painted?) pottery. Forms include both tetra- and tripods. Playa de los Muertos is an incised and modeled monochrome with a second color only occasionally used in conjunction with incised decoration (pl. 38, *a*). The associated clay figurines are hand-made rather than mold-made. Vessel forms are well-developed with effigy, single-spouted pots, and composite silhouette bowls being typical. There is still a third, stylistically distinct pottery group which is also stratigraphically early. This is the Yohoa Monochrome style which is on the same general technical level as Ulua Bichrome and Playa de los Muertos, but is, nevertheless, unlike them in an almost complete absence of decoration, and a lack of vessel appendages.

Three pottery traditions seem to dominate the Central American scene. One, the Colombian-Central American Plastic tradition, includes the "Central American Basic Culture," which Stone (Handbook, vol. 4, p. 169) has defined as the earliest and most fundamental Central American horizon. It seems evident, though, that pottery periods representative of this "horizon" are to be found as both early and late in the area. Because of this lack of consistency with respect to a single time horizon, I feel that the pottery tradition concept offers a better comprehension of the generally related, monochrome, incised, and modeled Central American wares than the basic horizon concept. That these incised and modeled Central American monochromes also have relationships to Colombian styles is obvious. The exact region of origin for the tradition is, for the present, only a matter for speculation, but it must lie somewhere in northwestern Colombia or Central America.

Another less widely spread tradition is the Central American Polychrome which includes Nicoya, related Costa Rican, and Nicaraguan styles, and Coclé of Panamá. The movement of this tradition seems to have been from north to south and on a relatively late time period.

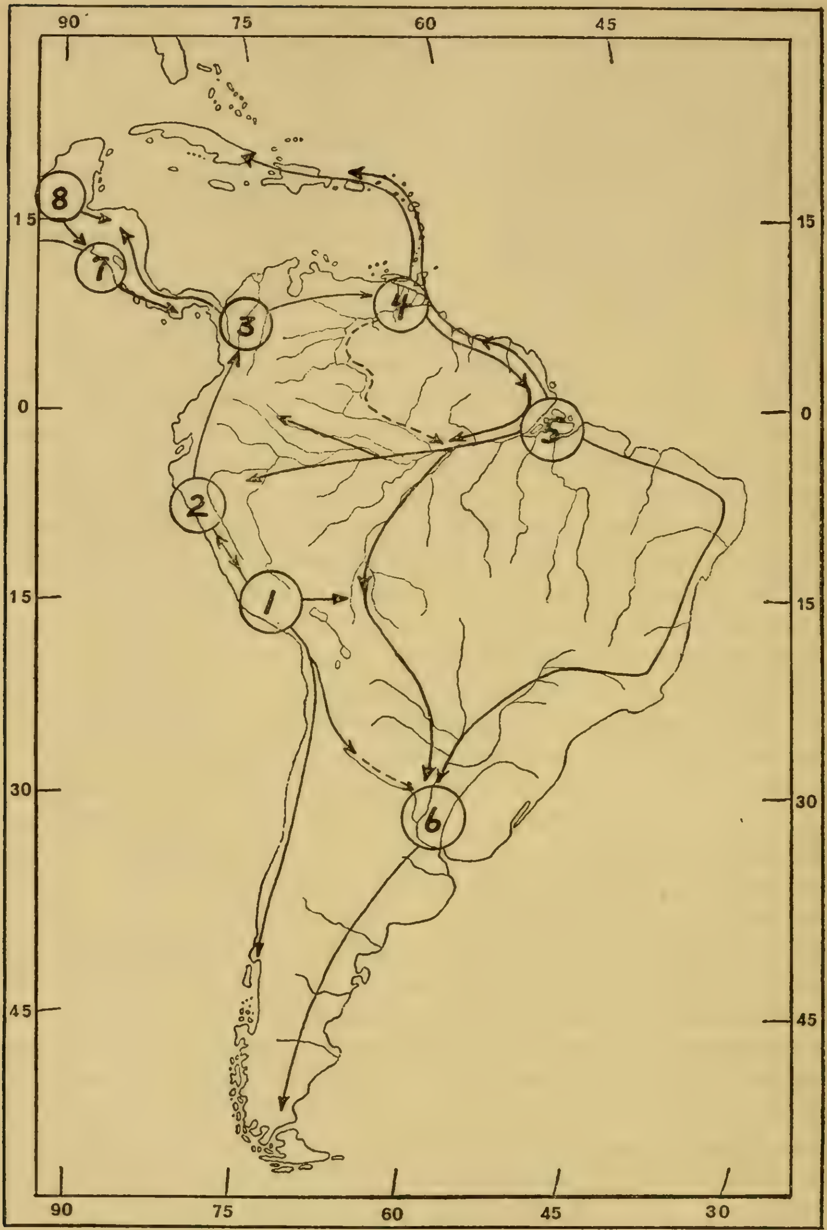
The third tradition is Guatamalan and not South or Central American. This is the *Mayan* tradition of polychrome painting. Its force was chiefly spent in northern, central, and southwest Honduras, where it appeared in the Middle Period, following styles of the Colombian-Central American Plastic tradition. The particular *Mayan* styles represented derive out of the *Maya* "Old Empire" ceramic series as of the Tepeu Period (approximately beginning around A. D. 700–800).

## ORIGINS, TRADITIONS, AND DIFFUSIONS

Lacking adequate information for detailed continental-wide correlations of pottery sequences, and in some areas lacking even sequences, the following summary purposefully deals in generalities and historical simplifications. Rather than to attempt a detailed comparison of relative chronologies, I will discuss a series of what appear to be secondary centers of pottery origins or foci for the major pottery traditions of South America and will plot the main courses and directions of the diffusions of these traditions. (See map 3.)

**The South Perú-Bolivian Center.**—This center is the hearth of the South Perú-Bolivian Polychrome tradition. Multicolor ceramics have been demonstrated to be very old on the South Peruvian Coast and in the Perú-Bolivian Highlands. The Paracas Covernas, Nazca, Early and Classic Tiahuanaco, and Pucara styles are early examples of this tradition in this center. The beginnings of these early painted styles probably go back to the opening of the Christian Era. The tradition has, however, stylistic expressions continuing through as late as *Inca* times and was spread throughout most of the Andes. Pottery representative of the tradition is found most intensively from Central Perú to North Chile and Northwest Argentina. There is some, although not conclusive, evidence to indicate that the polychrome idea spread into the South Andes sometime after the climax of the Classic Tiahuanaco Period. If the southward diffusion of the polychrome idea can be successfully dated as Tiahuanacoid, then the South Perú-Bolivian Polychrome tradition is certainly much older in the Central Andes than it is to the south.

**The North Peruvian Center.**—Somewhere between Lima and the Chicama Valley on the Peruvian Coast, plus the Highlands of the Callejón de Huaylas and neighboring districts, is the focal point for the origins of three, or possibly four, major Andean ceramic traditions. The earliest of these to appear was the North Peruvian Incised tradition as represented by the Early Ancón-Supe and Highland Chavín styles. Other incised styles in the tradition continue through Peruvian sequences. Chanapata, Sechín, and Middle Ancón I Incised are examples. In its earlier stages, the distribution of the tradition was apparently Northern and Central Perú. It is quite possible that incised wares in the South Andes may be a part of the North Peruvian Incised tradition. The North Peruvian Plastic tradition also has early beginnings in the Chavín Period, and in the Cupisnique style it is fused with the Incised tradition. The Plastic tradition is expressed up through to historic times, and styles representative of it are found from Central Perú to northern Colombia. It is found blended in various Peruvian, Ecuadorean, and Colombian styles with two other traditions of the North Peruvian center, North Peruvian White-on-red and Negative Painted. The first of these two traditions most probably had its origins on the Central or North Peruvian Coast, and along this coast it maintains a continuity up to the Historic Period. The Negative Painted tradition is more difficult to place in terms of origin. Negative styles occur early in their respective sequences from South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Map 3.—Estimated centers of the major pottery traditions of South America. 1, South Perú-Bolivian. 2, North Peruvian. 3, Colombian-Central American. 4, Orinocan. 5, Amazonian. 6, Paranense. 7, Central American. 8, Guatemalan.

Perú to Ecuador and Colombia. In the Highlands of Northern Perú, Ecuador, and Colombia, negative persists much longer than it does farther to the south; negative styles are much more numerous; and negative pottery is more abundant. The best guess for its center of origin would be the North Highlands of Perú or the Highlands of Ecuador.

**The Colombian-Central American Center.**—The implications of the foregoing are that the main lines of pottery influences were running from south to north or from Northern Perú to Ecuador and Colombia. It would appear, however, that there was another major pottery tradition, centering somewhere in Highland Colombia or southwestern Central America, which was merging with the traditions from the south. This tradition is the Colombian-Central American Plastic, represented by the incised, filleted, and relief and adorno modeled styles of Colombia, Ecuador, and Central America. The time positions of these Colombian-Central American Plastic styles are not always well defined, but there is a fair amount of evidence suggesting relatively early periods, such as Proto-Panzaleo I for Ecuador and San Agustín and Tierradentro for Colombia. In Central America, too, the plastic wares are probably the earliest yet discovered. Possibly, there is an ancient historic connection between the North Peruvian Incised tradition and the Colombian-Central American Plastic tradition. There are some rather startling similarities in surface-roughening techniques as, for instance, the zoned rocker-stamping common to both the Peruvian Chavín and the Honduran Ulua Bichrome styles. But if a connection existed it must have been extremely remote in time, so much so that the concept of separate traditions seems warranted in following out the diverse ceramic histories of the Central and Northern Andes.

In some zones the Columbian-Central American Plastic tradition continued into late times, either relatively pure, or blended with the painted traditions of the south, or what appear to be the later painted traditions of Central America.

**The Orinocan Center.**—The Orinocan pottery center dominates the Orinoco drainage, and its influences extend in both directions along the Venezuelan and Guiana Coasts. It has, undoubtedly, been influenced from the Colombian-Central American Center, but its principal lines of development, nevertheless, stand out with sufficient distinctiveness to justify its separate consideration. The middle and lower Orinoco River is the center of the Orinoco Plastic tradition. The deep, bold flowing curvilinear incised designs and the similarly sculptured vessel adornos are the characteristics of the tradition which is expressed through the medium of styles on the lower and middle reaches of the river, at Lake Valencia, and throughout most of the

Antilles. An important secondary center would appear to be the lower Tapajóz River in the Amazon Basin. The Tapajó or Santarém style is a unique florescence of the Orinoco tradition in which great emphasis is placed on adorno modeling and bizarre vessel forms. The stimulus for the Santarém development may have passed by the way of the Atlantic Coast and the mouth of the Amazon, or it may have crossed inland along the Orinoco tributaries. There is chronological evidence that the Orinoco Plastic tradition was preceded in the Greater Antilles by painted pottery and by an older incised style which does not appear to be in the same tradition. The painted pottery, which is red and white, may have traditional roots in the lower Amazon. The older incised style of the West Indies, as represented by the Meillac Period of Haiti, may be a separate, old Antillean tradition which had a center of origin in the Greater Antilles.

**The Amazonian Center.**—On Marajó Island and on the Atlantic coast north of the mouth of the Amazon there are a number of styles which have been grouped into the Amazonian Painted tradition. The emphasis of this tradition is red and white painting with the frequent use of additional darker (black or brown) pigments. On the lower Amazon and the Coast the tradition is blended with the modeling and incising so characteristic of the Orinoco Plastic tradition, but farther up the river, on the tributaries of the Montaña region, and in the Province of Mojos of eastern Bolivia, red and white or red, white, and black painting is the chief means of decoration. Similarly, in southern and southeastern Brazil, down to the Paraná drainage, the *Tupí-Guaraní* polychromes are painted wares deriving from the Amazonian tradition. Styles of the Amazonian Painted tradition continued to European contact, and even modern, times. Their wide distribution suggests considerable time depth for the tradition even though there is little archeological evidence on this point.

**The Paranense Center.**—The Paraná Plastic tradition is dominant throughout southern South America. Its simple incised and punctated decorations and the distinctive linear-punctations are reflected in styles from Paraguay down to the Straits of Magellan. The Patagonian stylistic variations probably represent the earliest stages of the tradition, and the Paraná River style, which includes biomorphic adornos, the latest stages. There is every indication that the tradition was the first in the south, the *Tupí-Guaraní* polychromes and fingernail-impressed styles arriving later. Some of the stimuli responsible for the Paranense Center were probably out of eastern South America, some possibly from the Bolivian Lowlands. The modeled adornos suggest Amazonian influence; but the incised and punctated techniques, if once Amazonian, Orinocan, or even Peruvian, have been so completely regionalized that their origins are obscured in the remote past.

There are two other styles, or possibly style groups, in the south that do not belong in the Paraná Plastic tradition or the Amazonian Painted tradition. One is represented by the widespread technique of fingernail-impressed pottery which is found from the eastern margin of the Andes to southern Brazil. In Late Periods, at least, it has been associated with the *Tupí-Guaraní* peoples. The tradition is undoubtedly very old, and its center of origin may lie within the Paraná drainage. The other style, or tradition, is the textile-impressed pottery of the very limited region of the Córdoban Highlands of Northwest Argentina. Apparently, it is a local development.

**The Central American Center.**—This center lies somewhere in Costa Rica or Nicaragua, and it appears to be the source for what I have chosen to call the Central American Polychrome tradition. The principal styles are Nicoya Polychrome, and its related painted types, and Coclé Polychrome. The distribution is relatively limited. Coclé resemblances have been mentioned for the Pearl Islands off the Pacific coast of Panamá, and vague affinities with painted styles of northwestern Venezuela have also been pointed out. What inferential evidence there is for sequence places the tradition as generally later than the Colombian-Central American Plastic tradition with which it overlaps in geographical distribution.

**The Guatemalan Center.**—The Guatemalan Center is out of the South American orbit, being Middle American in most of its relationships and distributions. Influences out of this center do play a small part in South America pottery history, and for this reason it is briefly considered. Elements of what might be called a *Mayan* Polychrome tradition are expressed in the Mayoid styles of Honduras. These are derived out of the *Maya* "Old Empire" Periods, and in Honduras they precede the Late pottery periods but follow the early incised styles of the Colombian-Central American tradition.

**Comments on time and origins.**—It has been said that South American regional sequences cannot be cross-dated accurately. This is true, but there are gross estimates which are supported by some facts and which are of interest in a review of origins and diffusions. For instance, the Peruvian major Middle Period can be tentatively equated with the earliest polychrome pottery of the South Andean area and with the negative-painted and plastic Middle Periods of Ecuador and Colombia. This indicates a further equation of Ecuador-Colombian Early Periods with the major Chavín and Early Periods of Perú. Continuing northward there is somewhat less secure evidence for equating the Colombian Early Period styles of the Colombian-Central American Plastic tradition with the old incised and modeled styles of the same tradition in Central America. In Honduras, a real antiquity can be demonstrated for this tradition, where it at least precedes *Maya* Polychrome of a Tepeu Period genre.

There are much greater difficulties in comparing Andean or Central American pottery with the ceramics of the Tropical Forest or southern South America. I am inclined to believe that origins of the east and the south are later than along the Andean-Central American axis, and that the first pottery ideas were transmitted from west to east, but this does not mean that the pottery of the Orinoco, Amazon, and Paraná Rivers does not have great time depth. If the beginnings of Central and North Andean pottery traditions are placed somewhere within a few centuries, either way, of the date A. D. 1, then the beginnings of the eastern traditions must be accorded dates only slightly later.

As to first and absolute origins, the question cannot be answered or even speculated upon to any advantage. It has been implied in this survey that the earliest South American pottery was made in the northwest, somewhere between the Central Andes and Central America. Whether pottery was independently invented in the Central or North Andes and from there spread north to Middle America, or whether the reverse is true, remains an unsolved historical problem. At present, I do not believe there is any evidence for claiming that the Formative (Middle cultures, pre-*Maya*, etc.) ceramic horizon of southern México and Central America is any older than the Chavín pottery horizon of Perú. Nor can Chavín be given temporal priority. Both horizons show a well-developed pottery, although, of the two, the Chavín is perhaps the simpler, whatever this may mean. In neither area have extremely simple ceramic periods, comparable to those of the marginal pottery areas of both North and South America, been discovered.

## COMMENTS ON POTTERY HISTORY AND DEVELOPMENT

### POTTERY SEQUENCES AND POTTERY EVOLUTION

An evolutionary series for the development of South American pottery has been proposed, above, as consisting of five stages or levels: (1) Absence of Pottery; (2) Crude Undecorated Pottery; (3) Simple Plastic and/or Painted Pottery; (4) Controlled Plastic and/or Painted Pottery; (5) Advanced Plastic and/or Painted Pottery. A geographical distribution study of the pottery, or lack of pottery, representative of these five levels has implied that there is a certain validity to the evolutionary hypothesis. To what extent do the specific pottery sequences in the several pottery areas of South America verify this developmental scheme?

A brief over-all glance at what is known of ceramic sequences reveals the following: In the Central Andean area, the earliest known pottery,

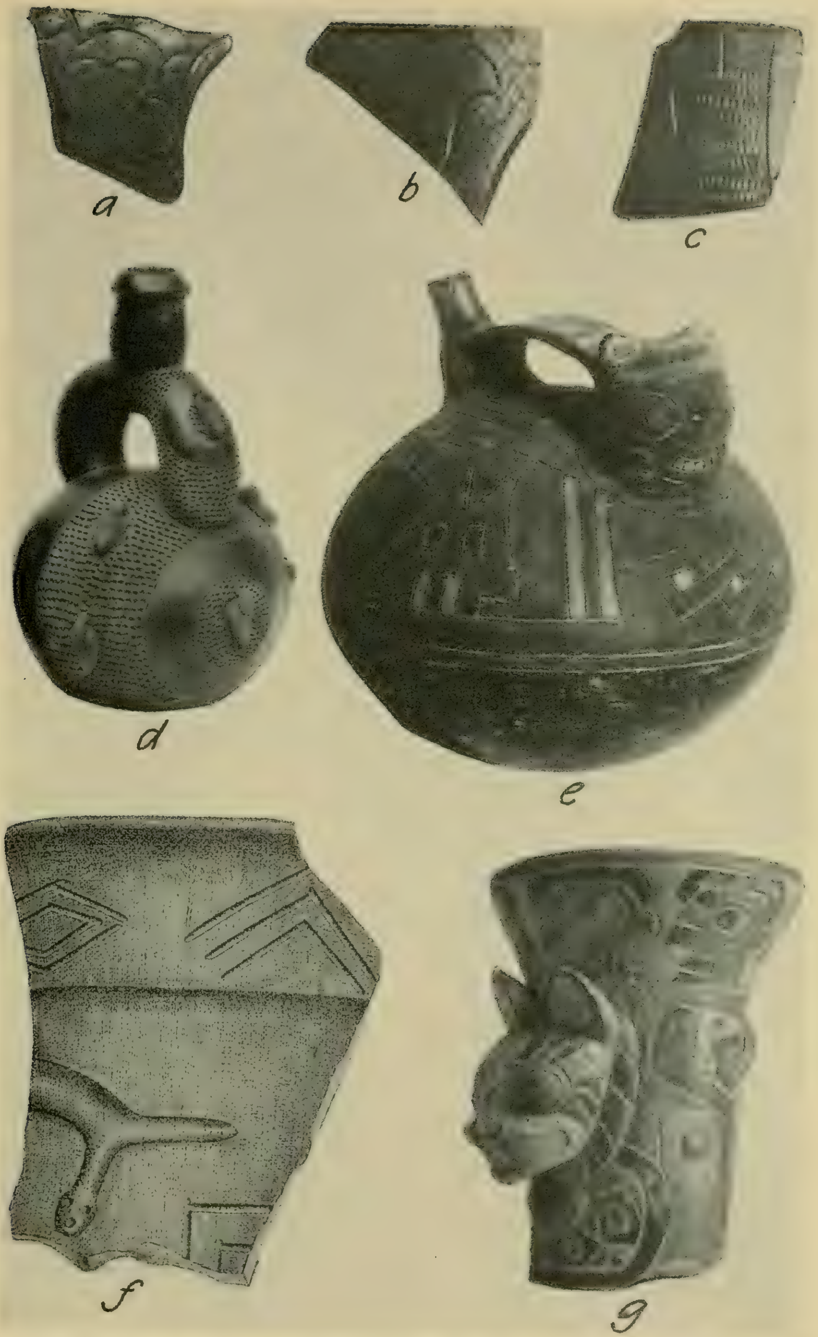

Plate 29.—**Pottery of the Central Andean Chavín and Early Periods.** *a–c*, Early Ancón style incised sherds; *d*, Coast Chavín or Cupisnique style; *e*, Paracas Cavernas style; *f*, Chanapata style; *g*, Pucara style. (*a–c*, After Uhle, 1912; *d*, after Bennett, this handbook, vol. 2, pl. 18; *e*, courtesy Museo Nacional, Lima; *f*, after Rowe, 1944, fig. 11.)

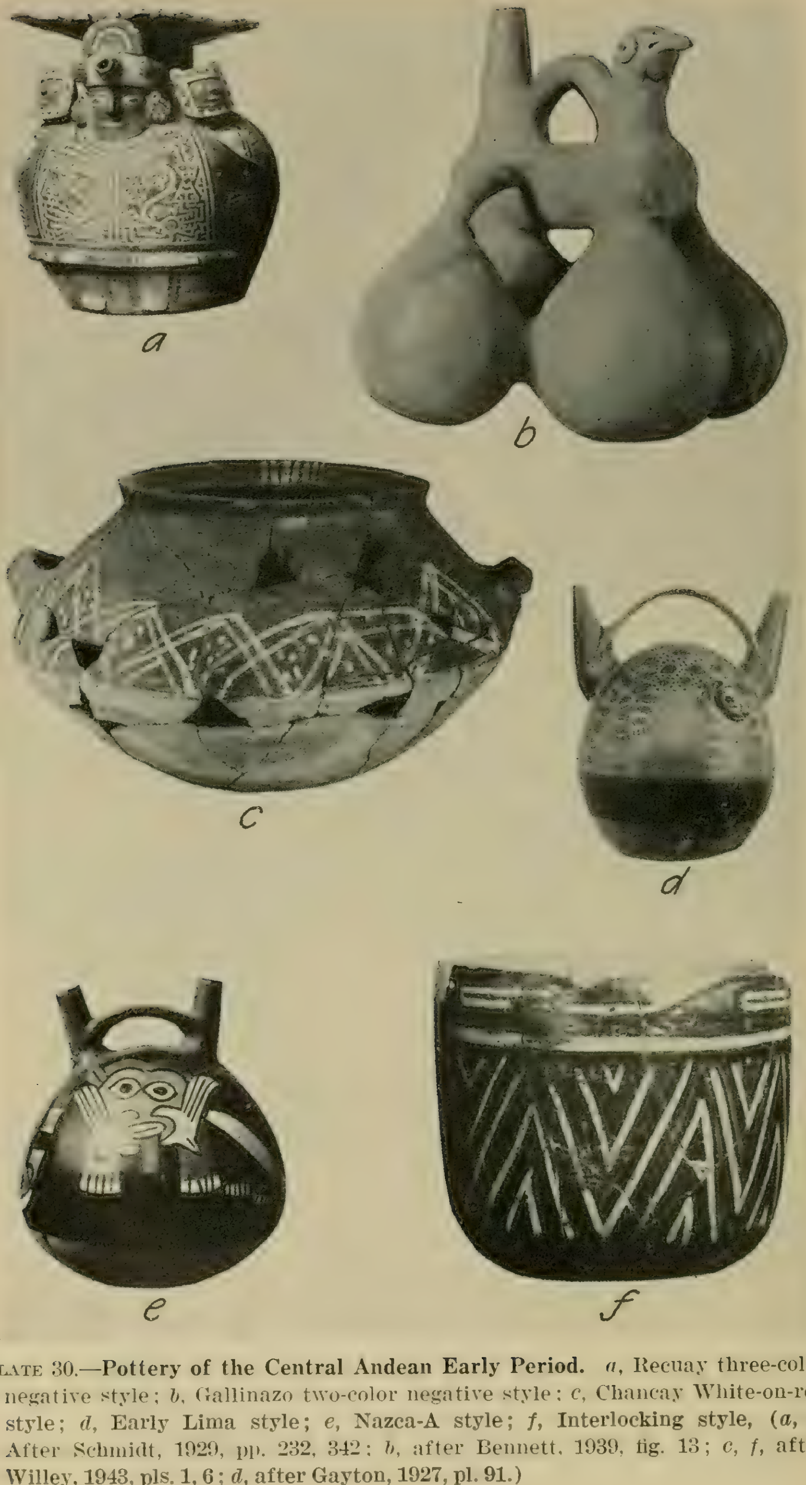

Plate 30.—**Pottery of the Central Andean Early Period.** *a*, Recuay three-color negative style; *b*, Gallinazo two-color negative style; *c*, Chancay White-on-red style; *d*, Early Lima style; *e*, Nazca-A style; *f*, Interlocking style, (*a*, *e*, After Schmidt, 1929, pp. 232, 342; *b*, after Bennett, 1939, fig. 13; *c*, *f*, after Willey, 1943, pls. 1, 6; *d*, after Gayton, 1927, pl. 91.)

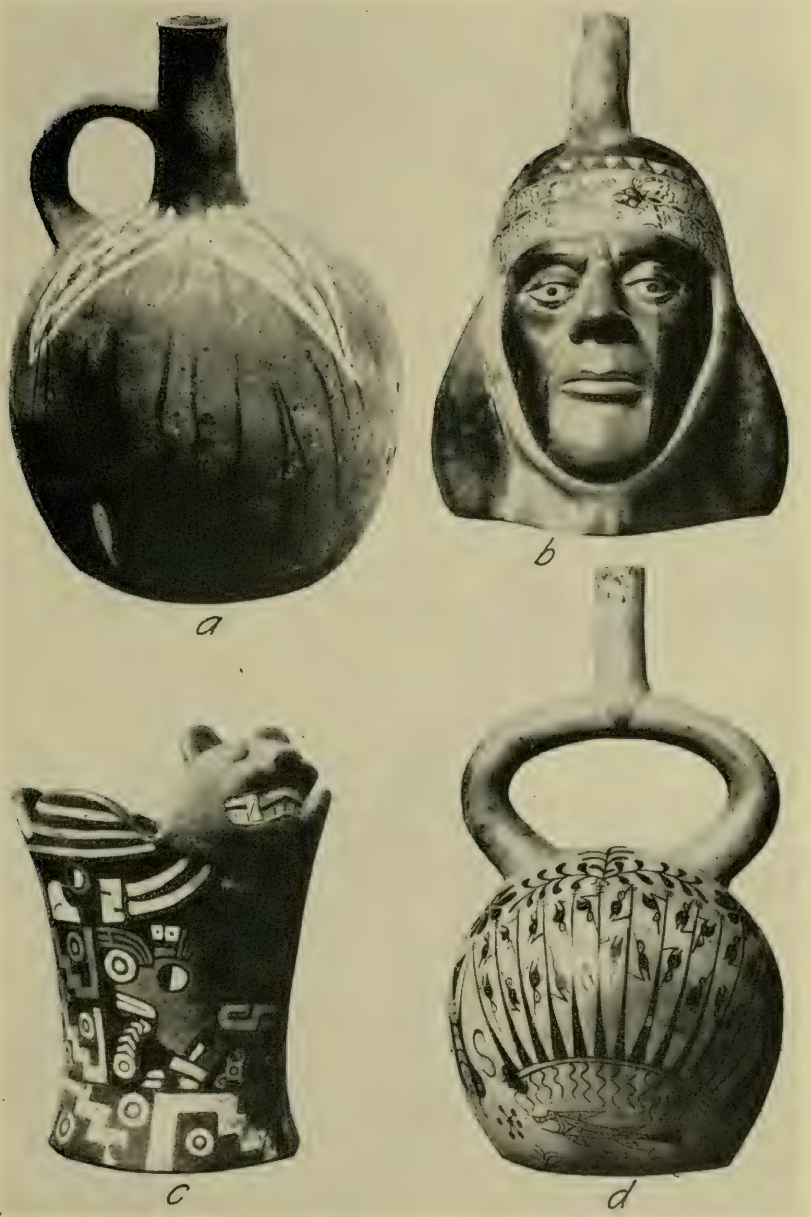

Plate 31.—**Pottery of the Central Andean Early Period.** *a*, Salinor White-on-red style; *b*, *d*, Mochica style; *c*, Classic Tiahuanaco style. (*a*, After Larco Hoyle, Handbook, vol. 2, pl. 67; *b*, *c*, *d*, after Schmidt, 1929, pp. 125, 359, 186.)

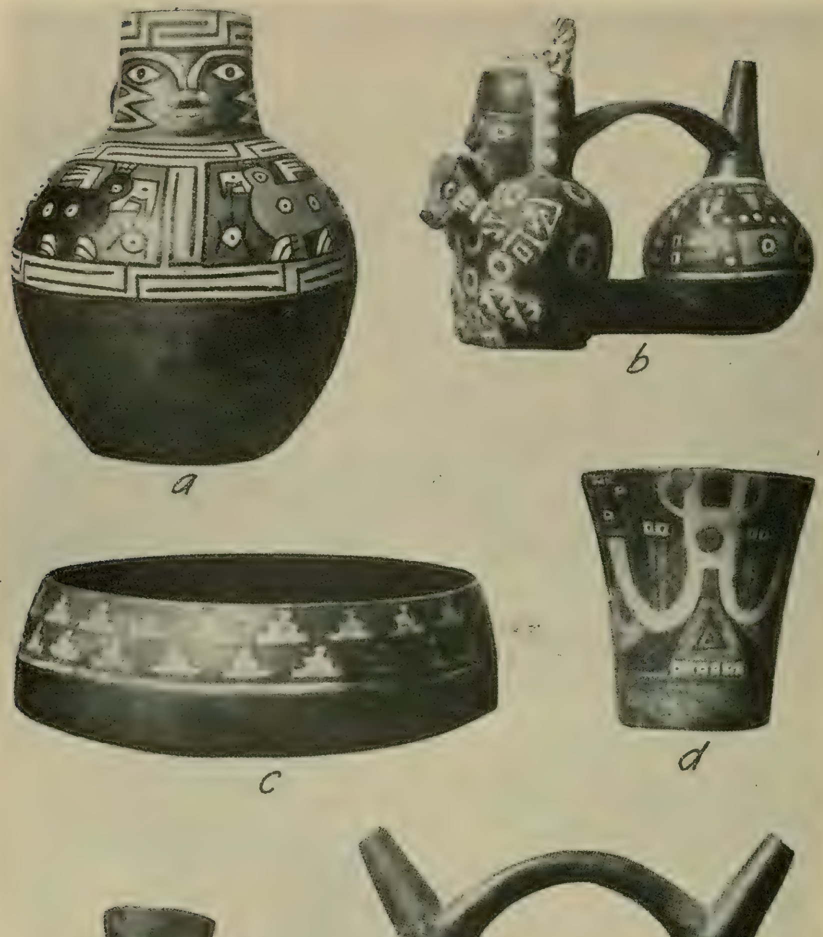

PLATE 32.—**Pottery of the Central Andean Middle Period.** *a, b, d,* Coast Tiahuanaco or Epigonal style; *c,* Middle Ica style; *e,* black, white, red geometric style; *f,* Pressed-ware style. (*a–d, f,* After Schmidt, 1929, pp. 283, 271, 304, 296, 221; *e,* after Bennett, 1939, fig. 10.)

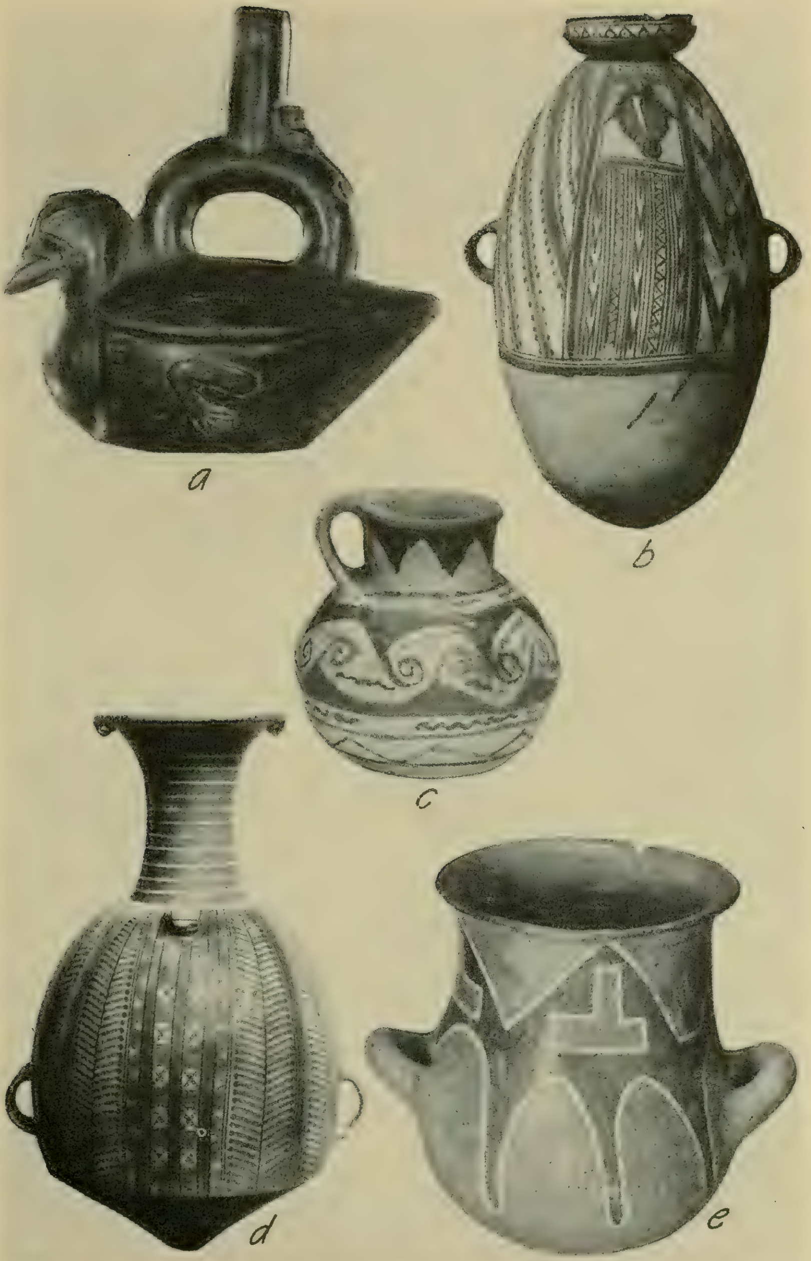

PLATE 33.—**Pottery of the Central and South Andes.** *a*, Chimu black-ware style; *b*, Late Chancay Black-on-white; *c*, Arica Black-and-red-on-white style; *d*, *Inca* Polychrome; *e*, Chilean *Diaguita* Black-and-white-on-red style. (*a*, After Bennett, 1939, fig. 17; *b*, *d*, after Schmidt, 1929, pp. 245, 349; *c*, after Bird, Handbook, vol. 2, pl. 121; *e*, after Lothrop, Handbook, vol. 2, pl. 135.).

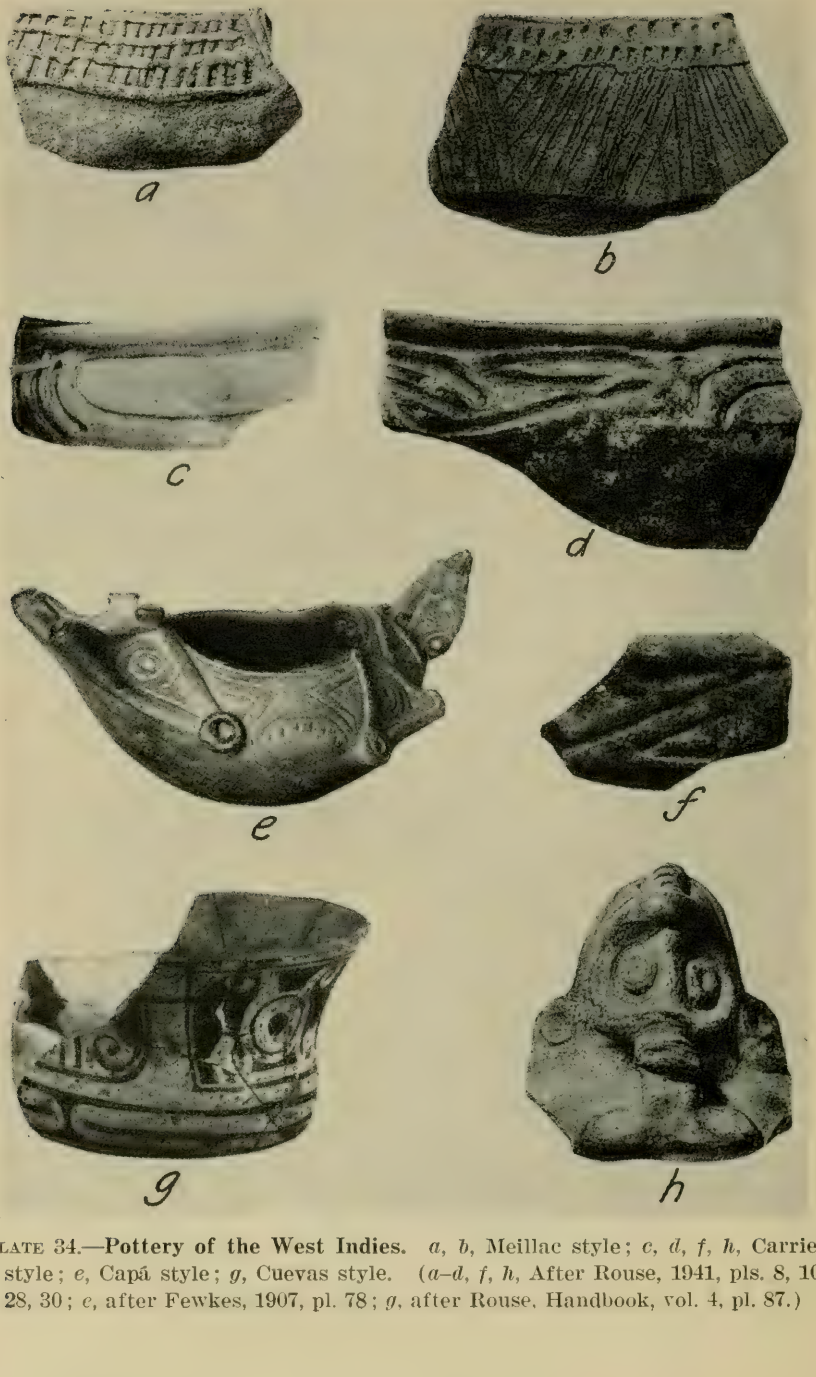

Plate 34.—**Pottery of the West Indies.** *a*, *b*, Meillac style; *c*, *d*, *f*, *h*, Carrier style; *e*, Capá style; *g*, Cuevas style. (*a–d*, *f*, *h*, After Rouse, 1941, pls. 8, 10, 28, 30; *e*, after Fewkes, 1907, pl. 78; *g*, after Rouse, Handbook, vol. 4, pl. 87.)

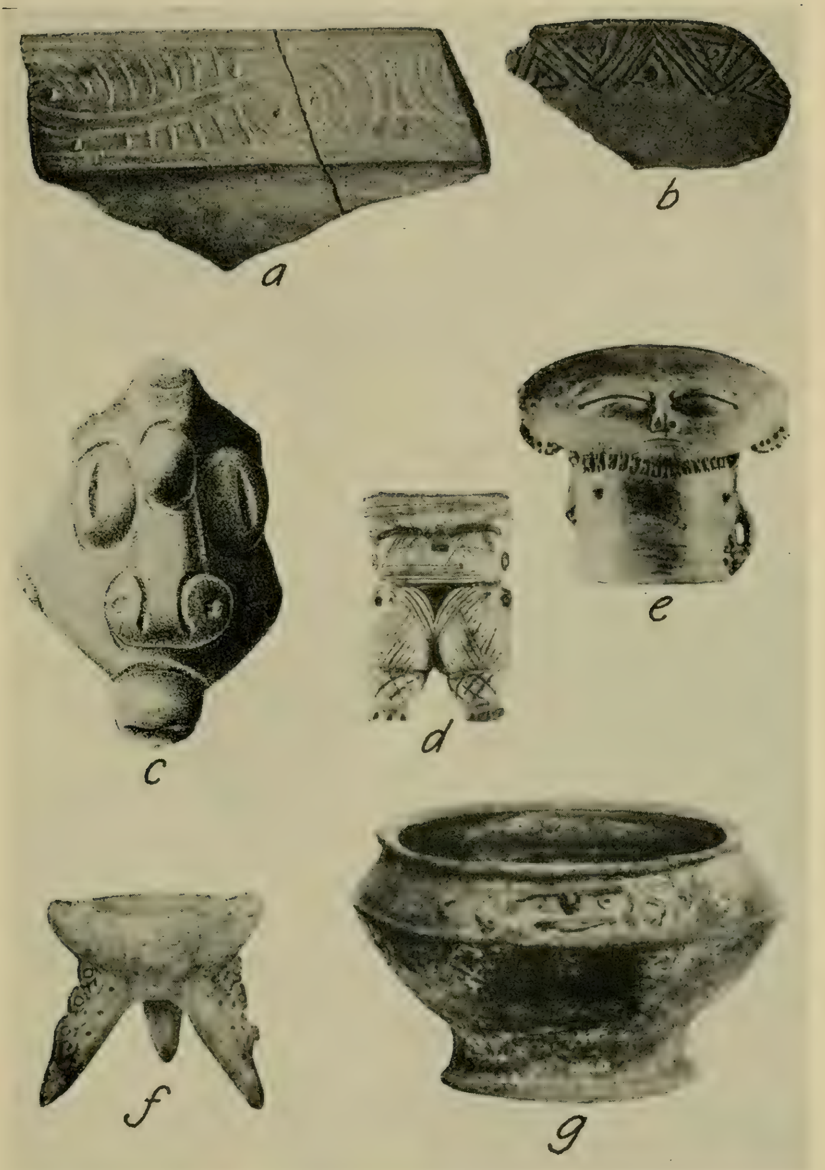

Plate 35.—**Pattery of Venezuela and northeastern Colombia.** *a*, Early Ronquín style; *b*, Late Ronquín style; *c*, La Cabrera style; *d*, Black-on-white figurine from western Venezuela; *e*, Late Lake Valencia figurine; *f*, Western Venezuela plain-ware tripod; *g*, Santa Marta appliqué ware. (*a*, *b*, After Howard, 1943, pls. 3, 2; *c*–*f*, after Kidder, 1944, pls. 2, 17, 7, 15; *g*, after Mason, 1939, pl. 170.)

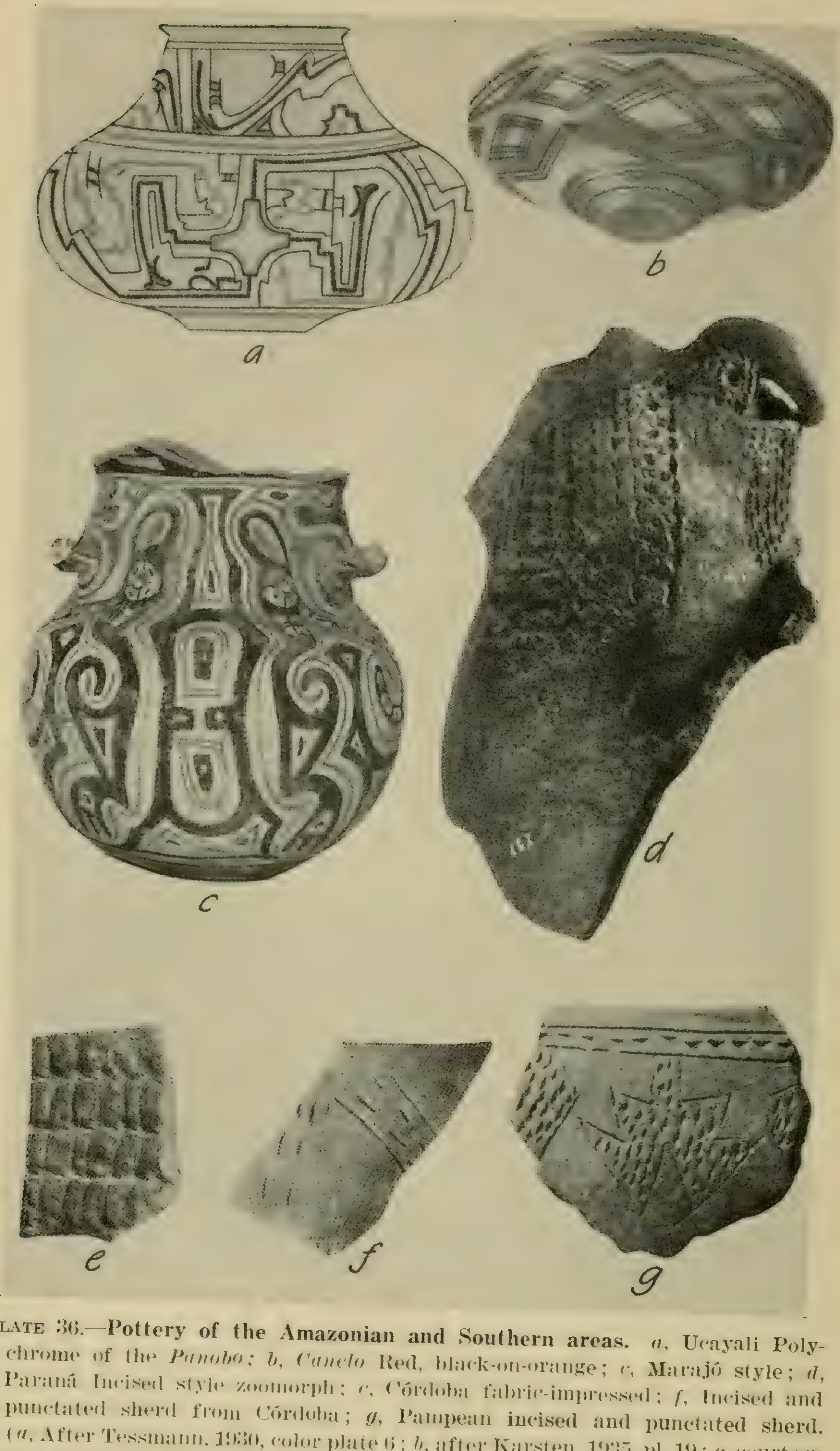

PLATE 36.—**Pottery of the Amazonian and Southern areas.** *a*, Ucayali Polychrome of the *Panobo; b*, *Canelo* Red, black-on-orange; *c*, Marajó style; *d*, Paraná Incised style zoomorph; *e*, Córdoba fabric-impressed; *f*, Incised and punctated sherd from Córdoba; *g*, Pampean incised and punctated sherd. (*a*, After Tessmann, 1930, color plate 6; *b*, after Karsten, 1935, pl. 19; *c*, courtesy United States National Museum; *d*, after Aparicio, 1939, fig. 2; *e*, *f*, after Serrano, 1945, figs. 150, 131; *g*, after Torres, 1922, fig. 42.)

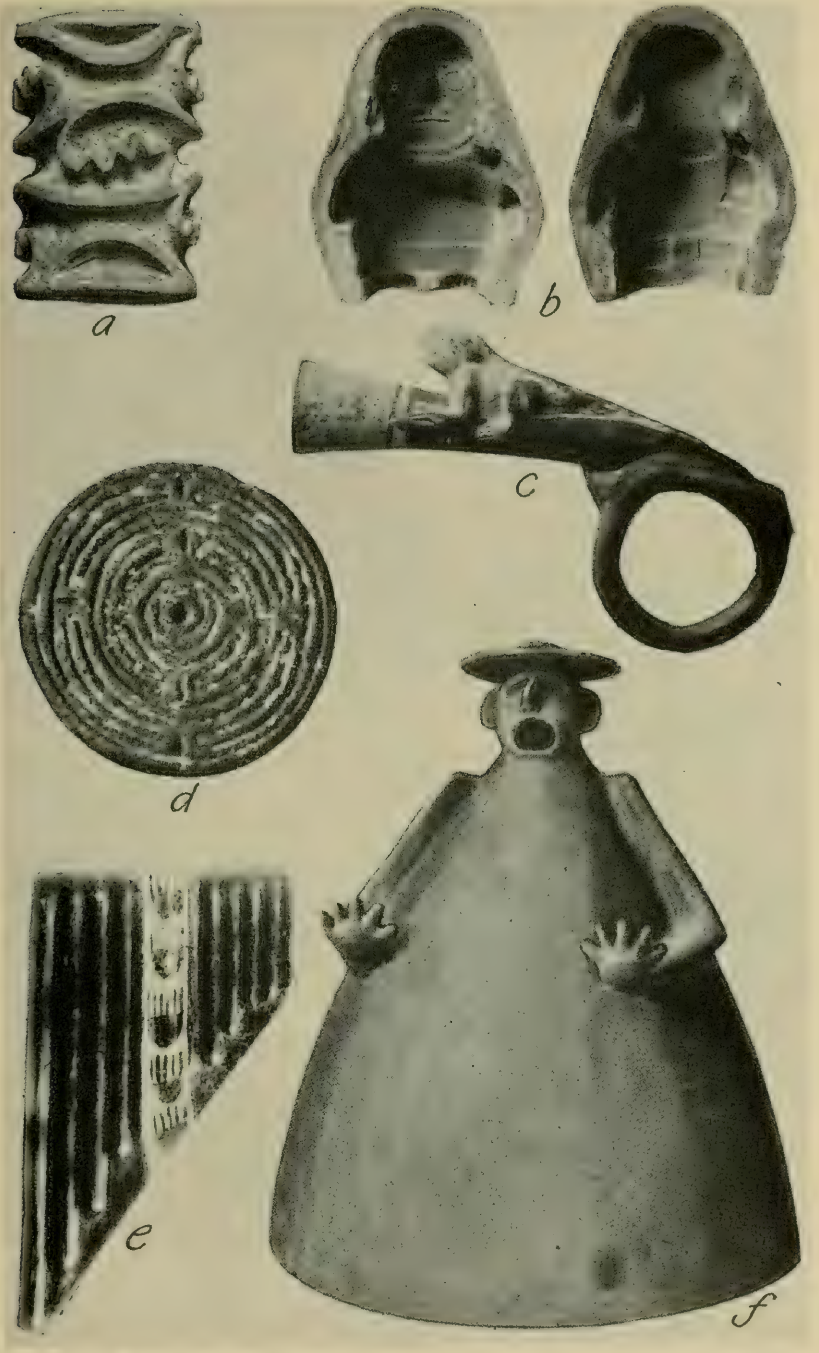

PLATE 37.—**Miscellaneous ceramic manufacturers.** *a*, *Quimbaya* cylindrical stamp; *b*, two sides to Mochica figurine mold; *c*, Mochica trumpet (broken); *d*, Puerto Rican flat stamp; *e*, Nazca panpipes; *f*, *Chocó* roof-apex cap. (*a*, After Bennett, 1944, pl. 10; *b*, *c*, after Schmidt, 1929, pp. 535, 206; *d*, after Fewkes, 1907, pl. 86; *e*, after Kroeber and Strong, 1924, pl. 89; *f*, after Nordenskiöld, 1928, pl. 96.)

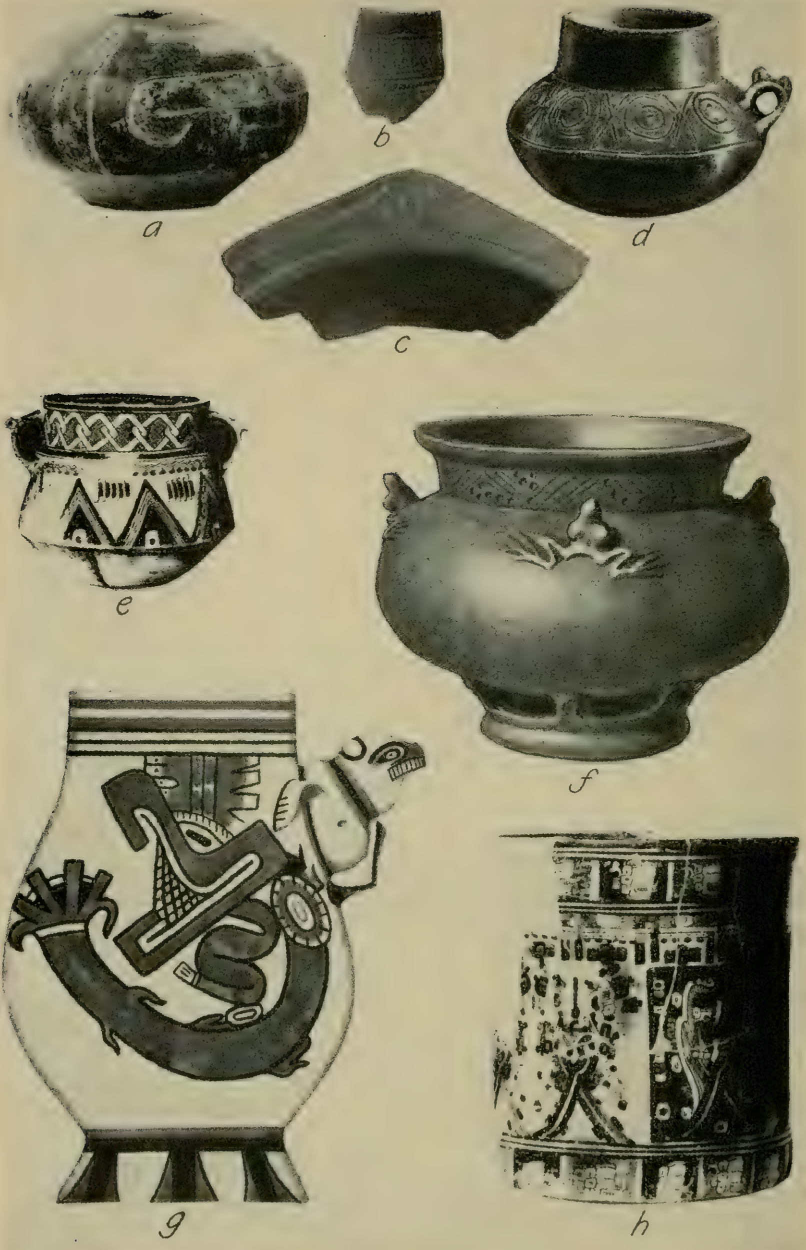

PLATE 38.—**Central American pottery styles.** *a*, Playa de los Muertos Bichrome; *b*, Ulua Bichrome (incised and rocker-stamped); *c*, Playa de los Muertos incised; *d*, North Coast Appliqué, Honduras; *e*, Bold Geometric, Honduras; *f*, Darién incised and appliqué vessel; *g*, Nicoya Polychrome; *h*, Ulua Mayoid. (*a–c*, *h*, After Strong, Kidder, and Paul, 1938, pls. 15, 9, 10, 8; *d*, after Stone, 1941, fig. 13; *e*, after Strong, 1934, fig. 54; *f*, after Linné, 1929, fig. 45; *g*, after Lothrop, 1926, pl. 46.)

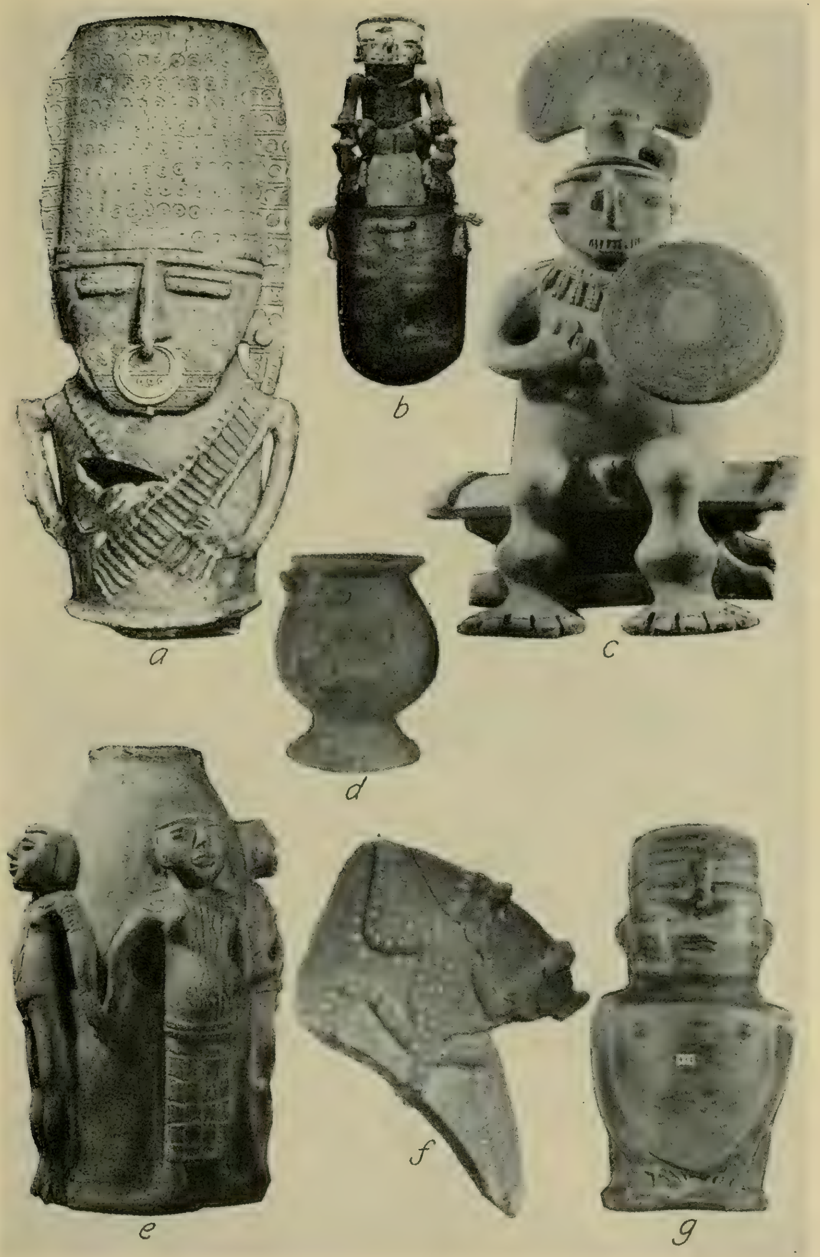

Plate 39.—**North Andean pottery styles.** *a*, *Chibcha; b*, Mosquito region, Colombia; *c*, Popayán region, Colombia; *d*, Upper Valley, Colombia; *e*, Sinú region, Colombia; *f*, Tierradentro sherd; *g*, *Quimbaya* negative painted. (*a*, After Seler, 1893, pl. 49; *b*, *e*, *g*, after Bennett, 1944, pls. 12, 11, 10; *c*, courtesy American Museum of Natural History; *d*, after Ford, 1944, pl. 2; *f*, after Hernández de Alba, Handbook, vol. 2, pl. 175.)

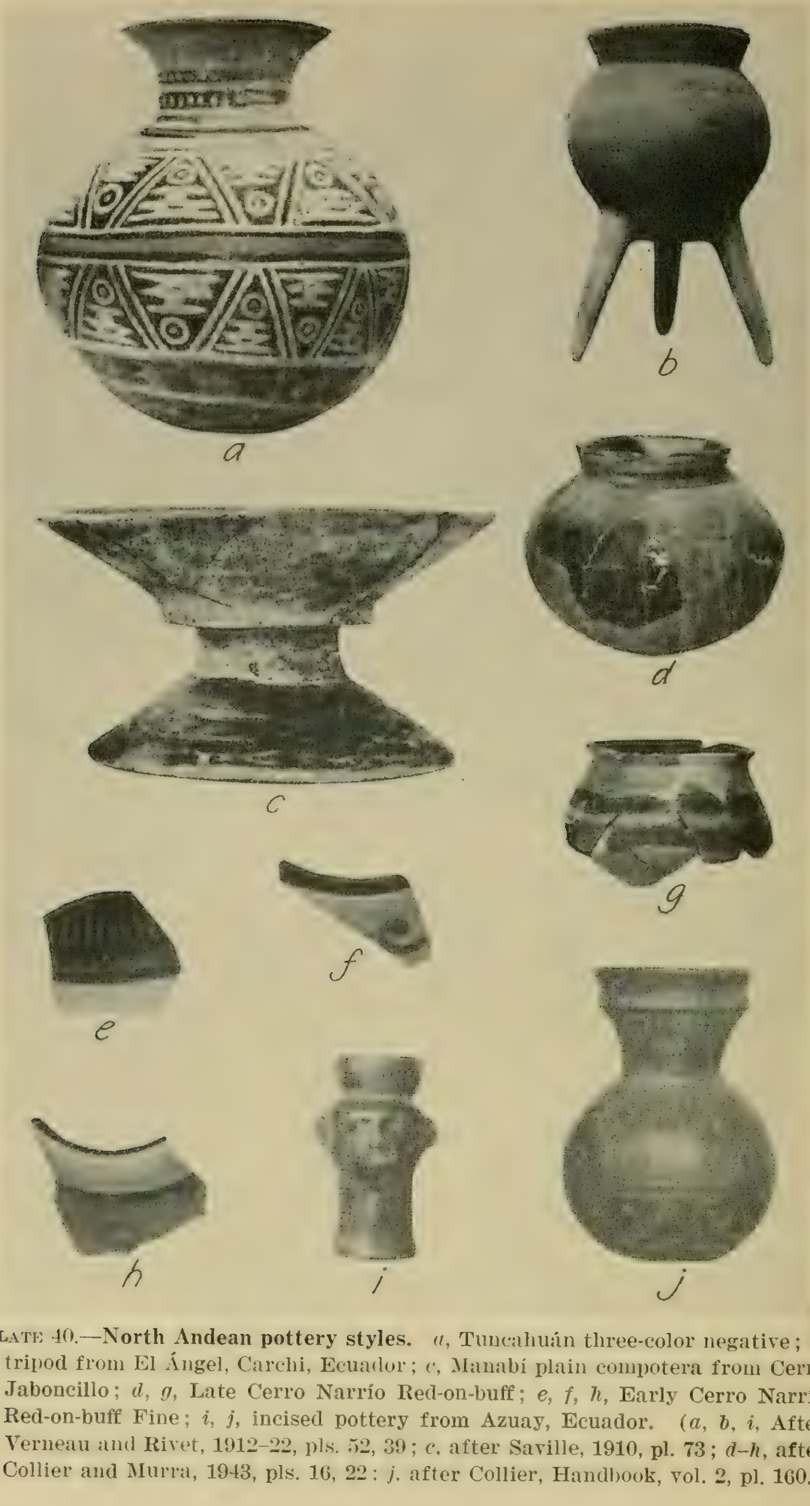

Plate 40.—**North Andean pottery styles.** *a*, Tuncahuán three-color negative; *b*, tripod from El Ángel, Carchi, Ecuador; *c*, Manabí plain compotera from Cerro Jaboncillo; *d*, *g*, Late Cerro Narrío Red-on-buff; *e*, *f*, *h*, Early Cerro Narrío Red-on-buff Fine; *i*, *j*, incised pottery from Azuay, Ecuador. (*a*, *b*, *i*, After Verneau and Rivet, 1912–22, pls. 52, 39; *c*, after Saville, 1910, pl. 73; *d*–*h*, after Collier and Murra, 1943, pls. 16, 22; *j*, after Collier, Handbook, vol. 2, pl. 160.)

Ancón-Supe and Highland Chavín, is either Simple or Controlled. There seems to be an increase in ceramic excellence after this up to the major Early Period, where such styles as Mochica, Nazca, and Classic Tiahuanaco are of the Advanced level and mark a climax for the area. Subsequent Central Andean styles drop back to the Controlled level. In the South Andean area, in Northern Chile, we begin with Absence of Pottery, proceed through the Pichalo styles, which are Crude or Simple, and attain the Controlled level with the painted *Atacameño*, *Diaguita*, and *Inca* styles. In the North Andean area I have considered all the styles as Controlled. There are, however, noticeable differences from period to period, and in both Ecuador and Colombia the trend seems to be from less-developed incised and modeled styles, to better-developed painted and plastic pottery, and, finally, a drop back to less-developed plastic wares in the Late Periods. In other words, the peak is achieved well before the historic horizon as it is in the Central Andes. What sequence there is in Venezuela shows Controlled pottery throughout but with some indication of a technical and esthetic decline in the later periods. The Greater Antilles of the West Indies go from a Simple to a Controlled Plastic level, but in the Lesser Antilles and Puerto Rico, all horizons are Controlled, the earliest painted, the later mainly plastic.

Areal distributions of wares in the Montaña suggest that Simple level styles were earlier than those of the Controlled level, but there is no proof of this. In eastern Bolivia the sequence is all within the Controlled level. Eastern Brazil has a suggested shell mound (sambaquí) sequence of Preceramic, Crude, Simple, and Controlled. This is still undemonstrated, but the outlines are convincing. In the southern area a good case can be made for Controlled Painted overlying Simple level wares. There is no clear-cut case for a Crude level horizon, but a preceramic stage has been tentatively defined in Argentina. In some parts of Central America there is a sequence of Controlled Plastic to Advanced Painting. In Honduras, there is a slump back to the Controlled level after the Advanced Painted which comes somewhere in midsequence. In Panamá, the Advanced Painting is in the final period.

To sum up, regional sequences generally accord, in spite of some discrepancies and lack of data, with the hypothetical stages of pottery development devised upon evolutionary principles. A preceramic horizon for the continent, or Absence of Pottery, is axiomatic. The Crude level is not clearly represented in any sequences, North Chile and the east Brazilian Coast being possible exceptions. Simple Plastic and Painted pottery usually precedes Controlled Plastic and Painted where there are adequate sequence data. Within the Simple level, the Plastic seems to precede, slightly, the Painted. Controlled level pottery always serves as a base for the Advanced. After the achievement of the Advanced Plastic and Painted level, several regional sequences show a decline back to the Controlled level. This retrogression from the Advanced level is a phenomenon not accounted for in the evolutionary hypothesis as stated. Nowhere, though, is there a retreat from the Controlled level in pre-European times. Such a slump is not seen until the European invasion of the continent and the subsequent disintegration of native cultures; however, this last factor lies outside the scope of aboriginal South American ceramic development and history.

## POTTERY AND CULTURE

If pottery development is a part of general culture evolution, then we should find some positive correlations between ceramics and cultural status. To turn first to the map (map 1) of pottery developmental level distributions, it has been demonstrated that the five hypothetical stages of development in ceramics represented upon the map have, in general, a time sequence validity beginning with "Absence of Pottery" and ending with "Advanced Pottery." We can, therefore, assume this evolutionary sequence to have real meaning in terms of change through time. From this point, it can be inferred as a working hypothesis that the general culture complexes associated with the five pottery-level areas might also be ranked in the same order of development as the ceramics.

At the bottom of the scale we have the Pottery Absent areas of Tierra del Fuego and the Chilean Archipelago and western Cuba. Tierra del Fuego and adjacent Chile is a cold, wet forest country unsuited to agriculture or to large permanent settlements depending for subsistence upon a preindustrial economy. Western Cuba has a much more favorable environment than Tierra del Fuego, but even here large sections of the land are uncultivatable marshy savannas. At European contact, the tribes of these regions were semisedentary hunting, fishing, and gathering peoples, few in number, living in small bands, and possessing an extremely simple technology. There is no evidence that their predecessors in these regions had ever achieved a more effective adjustment to their environment, had been more numerous, or had lived with more complex social organizations.

The next pottery level, Crude Undecorated, is represented mainly by the interior uplands of eastern Brazil. This country, although not as forbidding as the wet forests of the far south, is unfavorable for tillage of the tropical rain forest crops. Much of it is composed of relatively dry, open grasslands. The historic and modern tribes in this area either were not horticulturists or grew only a few crops to supplement hunting and gathering economies. Many of them were full nomads; and none established permanent, sizable villages. Technologically, they were quite primitive. In many parts of this interior Brazilian area there were probably never peoples existing upon a socially better organized or materially more abundant level than that observed in the historic periods. In other parts, it is probable that Tropical Forest horticulturists once were in occupancy, although the evidences of this occupation have not yet been reported upon.

Simple level pottery is typical for the nomadic and semisedentary people of Patagonia, the Pampas, Uruguay, and part of the Gran Chaco. These peoples were hunters and gatherers most of whom practiced no horticulture whatsoever. Except along the river valley bottoms of the north, the soils were of the heavy grassland type, unsuited for tillage by preindustrial methods. Game, fish, and wild plants were plentiful enough to sustain small bands of villages, but these sources of food were not sufficient to support large village communities. The enclaves of Simple pottery in the Andean Montaña are in the tropical rain forests, back away from the major tributaries. Some horticulture was practiced here, but planting was not intensive. Again, small bands and communities are the rule, and the technological adjustment to the difficult environment is at little more than the survival level. The northeast Venezuelan coast and the Goajira Peninsula, which are Simple level pottery areas, are arid, sandy coastal regions in which primitive agriculture was not practicable. The ethnology and archeology of this region indicate a generally low-level technology and community organization. The same holds for the interior llanos of Venezuela, and the interior of the Guianas. Although some agriculture was carried on in these regions, its productiveness did not approach that of the neighboring tribes of the big rivers. Eastern Cuba and Jamaica were well suited for agriculture and, from all evidences and accounts, it was practiced there on a moderate scale. Archeological remains indicate only small villages, however.

Controlled level pottery is characteristic of three different environments. In all of them agriculture was practiced on an intensive scale. Communities are large and stable and have apparently been so for some time in the past. The general technological level is far in advance of that characteristic of areas previously discussed. Transportation, aided by the enviroment, has been well developed. The first of these environments, the South Andes, is a high, dry, semiarid region where in most places irrigation is necessary for cultivation. The agricultural techniques used are well adapted to the peculiar environment and have, apparently, been employed for centuries. The second environment is also Andean, taking in Highland Ecuador and

Colombia. The crops are essentially Andean with some variations. The climate is not as cold nor as dry as the South Andes, and the mountain chains are more broken and divided so that the area includes important intermontane valleys. The third environment is lowland Tropical Forest, including the Amazon, Orinoco, and Paraná drainages, the Atlantic and Caribbean Coasts, much of the West Indies, and much of Central America. The domesticated food plants and the cultivating techniques are markedly different from those of the Highlands in many instances. Water transportation and general dependence upon river resources are characteristic, and the outstanding cultural afflorescences are on the lower courses of the great rivers or along the Caribbean Coasts.

The Advanced level pottery area of the Central Andes is, in total cultural content, the richest in South America. Agriculture is exploited to the full with both irrigation and fertilization techniques. Communities are large, tending to become true urban centers. Technologies and handicrafts are carried on at a high level. In some things, a sort of preindustrial mass production is attained. There is every evidence of large populations having lived in the area for a very long time. Social and political organization, as is well known, reached empire proportions. The Advanced level pottery area, or areas, of Central America, although not socially and politically as distinctive as Perú, show empire tendencies, and in some centers population was quite dense.

We can sum up these correlations quite simply. Those areas in which we find no pottery, Crude Undecorated pottery, and Simple Plastic or Painted pottery are also areas that appear to have been occupied from remote times by the marginal hunting and gathering peoples of the continent. Those areas of Controlled pottery have been occupied, at least in the later periods, by Andean, Tropical Forest, and Circum-Caribbean agriculturists. Advanced pottery areas are, on the one hand, in Perú, areas of the brilliant Central Andean civilizations; on the other hand, in Central America, they correlate with what was probably the pinnacle of social and political advancement for the Circum-Caribbean type cultures. (See Steward, this volume, for a discussion of South American culture types.)

An examination of regional ceramic sequences and culture sequences indicates, with exceptions to be indicated, similar positive correlations. North Chile is a good example, as it is the only stratigraphically determined culture sequence in South America in which a preceramic, prehorticultural base, underlying a pottery-agricultural period, has been fully described. Near Arica, refuse deposits show remains of a nonagricultural, hunting, and fishing people who made no pottery overlaid by debris of a people who raised maize, beans, and cotton and made Controlled pottery. At Pichalo, artifacts of a cultural complex, somewhat less well developed than those of the Arica agriculturists, but in advance of the Arica preagricultural people, are found with Crude or Simple level pottery.

The Peruvian sequences show further positive correlations between level of pottery development and total cultural development and status. In Perú, the preceramic horizon has not been isolated, but what are thought to be the earliest Chavín Period sites, have a pottery complex which shows both Simple and Controlled level types. From Early Chavín to such periods as Mochica and Nazca there is a steady rise in the quantity and quality of pottery made as well as increase in over-all cultural richness and complexity. From the small or medium-sized village and temple sites of Early Chavín there is a shift to larger population centers and mammoth temple and public-building constructions. This is the climax of the Peruvian Early Periods. From here on, however, the pottery sequence is marked by a retrogression from Advanced back to Controlled level.

It should be noted that this ceramic retrogression is qualitative rather than quantitative. Although no exact count has been made, it is quite obvious that more pottery was made during the Peruvian Middle and Late Periods than during the classic Early Periods. This may have been the result simply of greater production per individual or of increased populations. Either way, pottery production increased after the Advanced level of ceramic skill had been achieved and then lost in the Early Periods. We have, then, in Perú, and possibly elsewhere in South America, although this is not yet clear, two climaxes in pottery development. The one is an *esthetic and technical climax*, the other a *production climax*. For the first, greater skill and artistry was achieved and more time and care was expended by the artisan upon the individual product than at any other period in Peruvian pottery history. For the second, more pottery was produced, but the fine quality and intimate care lavished upon each piece was lacking.

The over-all cultural correlations seem to be these. The upswing to the esthetic and technical climax in Peruvian pottery development, culminating in the Advanced pottery stage, is paralleled, as has been pointed out, by an increasing cultural richness, by growing populations, and by a trend toward larger communities. All the evidence indicates that social and political organization of the time was localized in various small regions and that empire techniques had not yet been developed. The subsequent downgrade in the esthetic and technical ceramic qualities and the simultaneous upgrade in ceramic production was paralleled by a continuation of the political and social trends set in motion in the earlier periods. Population continued to grow; public works increased in size and scope; true urban centers came into being in the Late Period; and social and political organization was no longer confined to small geographical units but eventually became pan-Andean under the *Inca*.

It would appear from this that Peruvian culture in its Middle and Late Periods had lost the great interest that it had once maintained in ceramics as a craft and an art in itself. Pottery still served many functions and was made in great quantities, but its manufacture approached a mass-production scale. The product was serviceable, but the individual pieces no longer were works of art.

Following the advent of the European, the decline in native cultures was paralleled by a decline in ceramic arts. Particularly, this is true of the more ornate ceremonial wares. Post-Contact pottery, in those areas where European power had broken the old native governments and social organizations, and had replaced the aboriginal religions with Christianity, is usually technically capable, but it is rarely an esthetic achievement of any merit. In other words, after cultural breakdown, ceramics no longer were an important outlet for artistic, religious, or mythological expressions of the tribe. A later reversal of this trend toward degeneration in the ceramic crafts is seen, very recently, in pottery made for trade with Europeans. These vessels, or objects, are sold as curios, and they are often decorated. This "tourist renaissance," or revival, of the old native ceramics industry, is marked by a superficial, imitative quality, and does not come up to the ancient Controlled or Advanced pottery standards.

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# METALLURGY

By William C. Root

The use of metal by the pre-Columbian Indians of South America was almost entirely confined to the western edge of the continent, where the Andes provided an abundant supply of gold, silver, and copper, and smaller amounts of platinum and tin. The first objects of metal were probably made on the Peruvian Coast and in Colombia, and each of these two regions developed a distinct type of metallurgy. That of Colombia was based on gold, and the gold-copper alloy called tumbaga. That of Perú was based on gold, silver, copper, and bronze. The processes used in each region were much the same, but the emphasis was entirely different. The variations in local styles within these two metallurgical regions are sufficient to differentiate the metalwork of the various tribes although the technical processes are the same for all.

## SOURCES OF METAL

Native gold is found in great quantities in Colombia, Ecuador, Perú, and Bolivia. It is found to a lesser extent in the Antilles, Guiana, other parts of Central America, and in Chile and the Brazilian highlands. It is found almost entirely in the beds of mountain streams. Often, especially in Colombia, it contains as much as 15 to 20 percent of silver. Early Spanish writers state that the richest gold-producing region of all was Caravaya on the eastern slopes of the Andes near Lake Titicaca. Another rich region was the upper Cauca Valley of Colombia.

Native silver and silver ores are abundant only in Perú and Bolivia.

Native copper is found through the Andes in moderate amounts, and easily reduced copper ores are abundant in the Highlands of Perú, Bolivia, Chile, and Northwest Argentina.

Native platinum is found only in southern Colombia and Ecuador. Tin ore is found only in Bolivia and Northwest Argentina.

Various attempts have been made to determine the source of the metal used by the Indians through a comparison of the impurities found in the objects with the impurities found in the native metal and the ores from different mines (Jijon y Caamaño, 1920; Nordenskiöld, 1921; Lothrop, 1937 a; Root, MS. b), but the results have been disappointing. The characteristic impurities are too widely distributed, and there are too few ore analyses available. More work needs to be done on the ores from South America, and more analyses need to be made of objects of known origin.

## MINING

Various accounts of the mining operations of the Indians have come down to us. They show that most of the gold was obtained by the washing of gravel from stream beds, and only a little by digging into the earth. Most of the silver seems to have been obtained in the form of native silver from pits and from the smelting of ores. Copper was obtained as native copper, and perhaps from the smelting of ores.

One of the best accounts of mining as carried out by the *Inca* is given by Pedro Sancho.

> The [gold] mines [of La Paz] are in the gorge of a river, about half-way up the sides. They are made like caves, by whose mouths they enter to scrape the earth, and they scrape it with the horns of deer, and they carry it outside in certain hides sewn into the form of sacks or of wine-skins of sheep-hide. . . . The mines go far into the earth, one ten brazas [60 feet], another twenty, and the greatest mine which is called Guarnacabo goes into the earth some forty brazas [240 feet]. They have no light, nor are they broader than is necessary for one person to enter crouching down, and until the man who is in the mine comes out, no other can go in. . . . There are other mines beyond these, and there are still others scattered about through the land which are like wells a man's height in depth, so that the worker can just throw the earth from below on top of the ground. And when they dig them so deep that they cannot throw the earth out on top, they leave them and make new wells. [Pedro Sancho, 1917, p. 163.]

This is probably an accurate description of an early Peruvian mine. In the American Museum of Natural History at New York are the bodies of two copper miners with their stone hammers and baskets full of blue sand (atacamite), who were caught in the collapse of a mine at Chuquicamata, Chile. The mine is similar to that described by Pedro Sancho. The mines of Colombia and Central America were probably like those of Preú.

Mining under the *Inca* was controlled by the State, and has been described in volume 2 of the Handbook (pp. 245–248).

## SMELTING

There is still some doubt whether the Indians of Perú knew how to smelt the ores of silver and copper. Most writers on the *Inca* civilization have assumed that they could, but the evidence is not conclusive.

Early Spanish writers describe the production of silver plate and bars by the Indians from the native metal and its ores. In every case the account seems to refer to the smelting of silver at Potosí and Porco in southern Bolivia. Potosí was the richest silver region in all America. It was discovered in 1545, 12 years after the Conquest. Porco, known to the Indians, was near by.

Cieza de León visited Porco and Potosí in 1549. He wrote:

> In Porco, and in other parts of the kingdom where they extract metal, they make great plates of silver, and the metal is purified from the dross by fire, in which operation large bellows are used. [Cieza de León, 1864, p. 388.]

But at Potosí the silver could not be melted with the aid of bellows in the usual way. The Indians—

> . . . . therefore, made certain moulds of clay, in the shape of a flower-pot in Spain, with many air holes in all parts. Charcoal was put into these moulds, with the metal on the top, and they were then placed on the part of the hill where the wind blew strongest, and thus the metal was extracted, which was then purified and refined with a small bellows. In this manner all the metal that has been taken from the hill is extracted. The Indians go to the heights with the ores to extract the silver, and they call the moulds *Guayras*. In the night there are so many of them on all parts of the hill, that it looks like an illumination. [Cieza de León, 1864, p. 389.]

This is the earliest account of the furnaces called huayras.

I believe that the evidence now available leads to the conclusion that the Indians of Perú in their efforts to melt native silver in their furnaces and free it from earthly impurities inadvertently reduced certain silver ores to metallic silver because of the hot charcoal inside of the furnace. This was a simple form of smelting. It is doubtful if they knew what they had done and it is probable that they regarded it as merely one way of fusing the naturally occurring metal.

Barba (1923) who, in 1640, wrote the first book on American metallurgy, and other early writers give more details on the smelting of silver at Potosí. It was finally found that the infusible silver ores when mixed with soroche (galena, or lead sulfide) could be easily fused and reduced to metallic silver. The lead was then removed as dross by repeated fusions of the silver. This fusion of the silver ore with soroche is true smelting, but there is no reason to think the process was known to the Indians.

None of the early writers make any mention of how copper was obtained. Garcilaso de la Vega, quoting Blas Valera, writes:

> Copper, which they called anta, served them in place of iron for making warlike arms, knives, carpenter's tools, pins for fastening women's cloaks, looking glasses, spades for digging ground, and hammers for the plate workers. For these reasons they value copper very highly, for it was more useful to them than gold and silver, and the demand was greater than for any other metal. [Garcilaso de la Vega, 1871, 2: 43.]

But there is no hint how it was obtained. In none of the various descriptions of the huayras is there any indication that they were also used for the smelting of copper. Furnaces, crucibles, etc., have been found at various sites, notably in the *Diaguita* region of western Argentina. It is thought these were used for the smelting of ores, but they may have been used for the fusion of the native metal.

Boman (1908, p. 537) found at Cobres in *Diaguita* country, a prehistoric copper mine, a maray or place for crushing the ore, foundations of huayras or furnaces, and broken crucibles. The ore from the mine consisted of a copper silicate (chrysocolla), which is easy to reduce with hot charcoal. Boman analyzed the ore, some slag (?) from one of the huayras, and a bit of metallic copper from a crucible, with the following incomplete results:

| | *Ore* (*Percent*) | *Slag* (*Percent*) | *Metal* (*Percent*) |
|---|---|---|---|
| Copper | 14 | 6 | 98.7 |
| Iron | 36 | 34 | .9 |
| Lead | Trace | Trace | .3 |
| Silica | 7 | 41 | |

These results led Boman to the conclusion that the metal and slag were produced by the smelting of the ore from the adjacent mine. Boman also believes that the natives of the *Diaguita* region smelted copper carbonate (malachite, azurite) and the oxychloride (atacomite).

The weight of evidence is thus in favor of the view that the smelting of copper was known in the Highlands of Perú, Bolivia, and the *Atacameño-Diaguita* region. It has not been proved, however, and more work needs to be done on this problem. There is no evidence as yet that the smelting of silver or copper was practiced in Ecuador, Colombia, or Central America.

The smelting of tin by the Indians is even more uncertain. None of the early writers throw any light on the question. There is no doubt that the *Inca* knew how to make bronze, and how to regulate the tin content in a rough way. They may have smelted tin stone (cassiterite), which is common in Bolivia, and added tin to the copper; or they may have mixed the tin stone with the copper ore and smelted them together. Bingham (1930) found a rolled disk of metallic tin at Machu Picchu. He thought pieces might have been cut from it in making bronze. However, no other object of tin has been found in Perú or Bolivia. This problem also needs more work done on it.

It has been stated that the Peruvians knew how to refine gold and silver, but there is no evidence that they could do more than free silver from copper and lead by the continued heating of the molten metal. It is unlikely that they could separate gold and silver once they were melted together, or make gold of good quality from a silver-rich gold.

## WORKING OF METALS

Before considering the details of the technical processes used in the manufacture of the metal objects that have come down to our day, there is some evidence from the early writers on how metals were worked in Perú.

The metalworkers were located in the principal cities of the provinces, and worked under the direction of the chiefs.

> In all these capitals the kings had temples of the Sun, and houses with great store of plate, with people whose only duty it was to work at making rich pieces of gold and great bars of silver. [Cieza de León, 1883, p. 60.]

The Indian chiefs when visiting the *Inca* Emperor, in addition to giving him gold and silver, would bring to him—

> the men who excelled in any art, such as silversmithing. . . . For the Incas had men skilled in all these arts, and the Curacas presented such men, as worthy to serve their King. The common people did not require the aid of such artizans. [Garcilaso de la Vega, 1871, 2:22.]

And from Blas Valera,

> There were certain arts and employments which had their masters, such as workers in gold, silver, and copper. . . . Their children learned the same trade as their fathers. [Garcilaso de la Vega, 1871, 2:40.]

Benzoni (1565) gives a well-known account of the melting and working of gold as practiced by the *Inca* goldsmiths at Quito.

> This province of Quito has a temperate climate, wherefore the kings of Cuzco lived there the greater part of their time, and had in many parts houses of goldsmiths, who, though not using any tools of iron, still manufactured wonderful things. They worked in the following manner:
>
> In the first place, when they wished to melt the metal, they put it into either a long or round grisolo, made of a piece of cloth daubed over with a mixture of earth and powdered charcoal; when dry, it is put into the fire filled with metal; then several men, more or less, each with a reed, blow till the metal is fused. It is now taken out, and the goldsmiths, seated on the ground, provided with some black stones shaped on purpose, and helping each other, make, or more correctly speaking, used to make during their prosperity, whatever they were commissioned to do; that is, hollow statues, vases, sheep, ornaments, and, in short, any animals they saw. [Benzoni, 1857, pp. 250–251.]

Cieza de León, in 1553, wrote:

> When they work they make a small furnace of clay where they put the charcoal, and they then blow the fire with small canes, instead of bellows. Besides their silver utensils, they make chains, stamped ornaments, and other things of gold. Even boys, who to look at them one would think were hardly old enough to talk, know how to make these things. [Cieza de León, 1864, p. 404.]

Garcilaso de la Vega (1609), although trying to show the Indians of Perú in the best possible light, has a curious chapter in which he considers some of their shortcomings.

> . . . it will be well to show how unskillful their mechanics were in their crafts . . . To begin with the workers in metals: although they were so nu-

> merous, and so constantly exercising their calling, they knew not how to make an anvil, either of iron or of anything else, and they could not extract iron, though there were mines of that metal in their land. . . . They used certain very hard stones, of a color between green and yellow, instead of anvils. They flattened and smoothed one against the other, and held them in great estimation because they were very rare. Nor could they make hammers with wooden handles. But they worked with certain instruments made of copper and brass mixed together. These tools were of the shape of dice with the corners rounded off. Some are large, so that the hand can just clasp them, others middling size, other small, and others lengthened out to hammer on a concave. They hold these hammers in their hands to strike with as if they were pebbles. They had no files or graving tools, nor had they invented the art of making bellows for blast furnaces. They blasted by means of tubes of copper, the length of half-a-cubit, more or less, according as the furnace was large or small. The tubes were closed at one end, leaving one small hole through which the air could rush with more force. As many as 8, 10, or 12 of these were put together, according to the requirements of the furnace; and they went round the fire blowing with the tubes. They still use the same method not being willing to change their customs. They had no tongs for drawing the metal out of the fire, but did this with poles of wood or copper, and threw the heated metal on small heaps of damp earth which they had ready to cool it. They drew it from one heap to another, until it was cool enough to hold in their hands. Notwithstanding these inconvenient contrivances, they executed marvellous works, chiefly in hollowing things out. . . . They also found out, in spite of their simplicity, that the smoke of certain metals was injurious to the health, and they consequently made their foundaries in the open air, in their yards and courts, and never under a roof. [Garcilaso de la Vega, 1869, pp. 201–202.]

The only description of the working of metal from Colombia is by Raleigh (1596), who obtained his information from an old Indian.

> I asked [Topiawari] after the manner how the Epuremei wrought those plates of golde, and howe they coulde melte it out of the stone; he told me that most of the gold which they made into plates and images was not secured from the stone, but that on the lake of Manoa, and in a multitude of other rivers they gathered it in graines of perfect golde and in peeces as bigg as small stones, and that they put to it a part of copper, otherwise they could not worke it, and that they used a great earthern potte with holes round about it, and when they had mingled the gold and copper together, they fastened canes to the holes, and so with the breath of men they increased the fire till the mettell ran, and then they cast it into moulds of clay and stones, and so make those plates and Images. [Raleigh, 1848, p. 96.]

The quotations from Benzoni, Cieza de León, and Garcilaso de la Vega give a good idea of how the metals were melted, hammered into sheets, and worked into cups, etc., by the *Inca* metal workers just before the Conquest. Unfortunately, some of the most interesting processes used by the metalworkers are not mentioned at all—such as casting, soldering, and gilding. Knowledge of these can only be obtained from an examination of the actual cups, rings, knives, figurines, etc., made by the metalworkers of Colombia and Perú.

## HAMMERING, EMBOSSING, AND ENGRAVING

The first processes used by primitive peoples in working of metals are hammering and embossing. The earliest metal objects from South America are of gold hammered into very thin sheets. Some of the gold masks from Paracas (ca. A. D. 500) are 0.04 to 0.06 mm. thick. They were embossed and cut to the desired shape. The embossing was probably done with a rock of suitable shape while the gold sheet was lying on a piece of wood.

At a somewhat later date (A. D. 1000) gold effigy cups were made at Ica by shaping the sheet of gold over a wooden form carved to represent a head. This was also done in the Moche-Lambayeque region, where necklaces of identical small gold pendants are quite common. In the Sinú region of Colombia numerous stone molds have been found which were similarly used for shaping gold sheets into pendants. This was probably common practice wherever gold was used.

Large cups were frequently made in two pieces. The upper portion was allowed to overlap the lower portion several centimeters and the two portions were then hammered together. The joint is often nearly invisible. Occasionally, the upper portion was joined on the side by a staggered joint.

Gold is very soft (Brinell hardness of 30). It is the easiest of metals to work as it remains soft when hammered and thus does not need to be annealed. The whole operation can be carried out without the use of a furnace or blowpipe. Silver is even softer than gold (24) and can be hammered into very thin foil, but it becomes hard and brittle on cold working (90) and should be annealed. For this reason pendants, masks, and cups of silver are usually thicker than those made of gold. Copper is the most difficult of the three metals to work into sheets. It is a little harder than gold (53). When cold worked it becomes very hard (135) and objects may crack unless annealed. On annealing it becomes soft (35). Masks and pendants of sheet copper are fairly common especially in the Chimu region.

Clément (1932, 1935) examined many copper and bronze axes from Perú, Ecuador, and México and found that nearly all of them had been hardened by cold hammering. Cold-worked copper is harder than unworked cast bronze of low tin content.

This is probably the basis of the legends concerning the "lost art" of hardening copper supposedly possessed by the *Inca*.

In Colombia similar use was made of the hardening of a gold-copper alloy (tumbaga) under hammering. A gold-copper alloy containing 20 percent of copper becomes much harder than cold-worked copper and somewhat less hard than cold-worked bronze (8 percent of tin) as is shown in table 1.

TABLE 1.—*Effect of cold hammering on hardness of metals present in pre-Columbian South American axes*

| Metal | Brinell hardness | |
|---|---|---|
| | As cast | Cold hammered |
| Copper | 30 | 100 |
| Bronze (5 percent tin) | 55 | 200 |
| Bronze (10 percent tin) | 90 | 275 |
| Alloy of gold (80)-copper (20) | 110 | 200 |
| Alloy of silver (92)-copper (8) | 60 | 183 |
| Alloy of gold (52)-silver (22)-copper (26) | 150 | 200 |
| Steel (average) | 104 | |

**Engraving.**—Engraving of metal was occasionally used in Perú, but was much less common than embossing. Some of the early sheet gold cut-outs from the Titicaca region (Early Tiahuanaco?) have details added by means of incised lines, but they are poorly done. They are the earliest examples of engraving (about A. D. 700). The later cups from Cuzco and the Chimu region are carefully engraved in complex designs.

Garcilaso de la Vega states that engraving tools were not known. The lines on some objects are so carefully done, however, that it seems probable that some instrument was used, perhaps a hardened bronze needle.

**Sheathing.**—In the Mochica Period sheet gold was used to cover wooden poles, etc. It was fastened to the wood by tiny gold, silver, or copper tacks. In the Nazca region metal sheathing has so far been found only in the Late Period, when it was extensively used. It is not known whether the Coast cultures used sheets of metal to cover stone or adobe. In *Inca* times fairly heavy gold sheets were used to cover parts of the walls of the temples and certain of the palaces.

It is not known whether sheathing was used at an early period in Colombia and Central America. It is found frequently in the later periods, not only with wood, but with objects of stone and other material. The gold and silver foil was probably attached by some adhesive, such as "Pasto varnish" (Handbook, vol. 2, p. 930) or gum.

## CASTING

The origin of the casting of metal in South America is not known. It is one of the problems which cannot be solved without more knowledge of the archeology of Colombia and Ecuador and the Peruvian Highlands. Bergsøe (1937) thinks that before casting was known, small amounts of gold were fused on a charcoal block with a blowpipe. The small gold beads at Esmeraldas on the Ecuadorean coast were probably made in this way. Larger pieces of metal were hammered into shape. Then the furnace was discovered and casting became possible.

The earliest examples of true casting now known are from Mochica sites (earlier than A. D. 900). Two copper chisels excavated by Uhle from the Huaca de la Luna at Moche have elaborate cast handles and seem as complex as anything from a later period. Casting may have been known at the very end of the Early Nazca Period (Nazca B) but does not seem to have been known at Chavín or Paracas. However, by the Middle Periods (A. D. 900–1100) knowledge of casting had spread to all parts of the Peruvian Coast and Highlands. Cast objects, some quite simple, are frequently found in Colombia, Ecuador, Bolivia, and the *Diaguita* region of Argentina. Their relation to Peruvian casting is not known.

The first metals to be cast were gold, silver, and copper, then the alloys of gold and copper and copper and silver were used, and finally, bronze. Platinum was used in Ecuador for hammered ornaments but was never cast, as it has such a high melting point. Gold and copper have fairly high melting points, and the Indians must have had difficulty in fusing them without the aid of blowpipe or a furnace with a forced draught like a huayras. The alloys of the metals have melting points that range from that of the pure metal to that of the eutectic. The eutectic has the lowest melting point of any alloy made from a given two metals. One reason for the use of alloys was their easier fusion and greater liquidity. The alloys also had special properties which made their use advantageous in certain circumstances. In table 2 are given the melting points of the pure metals and their eutectics, and the difference between their melting points and that of gold.

TABLE 2.—*Melting points of metals and their eutectics compared with melting point of gold*

| Metal | Melting point C° | Above or below melting point of gold C° |
|---|---|---|
| Platinum | 1,755 | +692 |
| Copper | 1,083 | +20 |
| Gold | 1,063 | ---------- |
| Silver | 960 | −103 |
| Bronze (16 percent tin) | 950 | −113 |
| Gold (82 percent)-copper (18 percent) eutectic | 880 | −183 |
| Silver (72 percent)-copper (28 percent) eutectic | 779 | −284 |

The alloy of gold and silver (electrum) consists of an unbroken series of solid solutions. As silver is added to gold the melting point of the alloy gradually decreases from 1,063° to 960°. The alloy is a little harder than gold. With 40 to 50 percent of silver it is of an unattractive gray color. This alloy was sometimes used in Perú but infrequently. Since the alloy is no better than gold or silver in its physical properties, and is inferior to either in appearance, its occurrence is probably due to the careless melting together of gold and silver.

Tumbaga (gold-copper alloy) was extensively used in Colombia and Central America and to a slight extent in Ecuador and Perú. It is impossible to say at present when or where it was discovered. It seems to have originated in Colombia or Venezuela sometime before A. D. 1000 and spread from there to Central America, and to Ecuador and northern Perú. Its discovery is as important as that of bronze.

Gold and copper form two compounds, Cu-Au with 75 percent of gold, and $Cu_3Au$ with 51 percent of gold. These exist only below 420° C. They are hard and brittle. If a Au(82)-Cu(18) alloy (the eutectic) is allowed to cool slowly from 800° C. the compounds have a chance to form, and the Brinell hardness may be as great as 190. If cooled rapidly they do not have a chance to crystallize out and the hardness is 122. With a Au(50)-Cu(50) alloy the compounds do not form at all, and the hardness of rapidly cooled and slowly cooled alloy are 80 and 40. This means that gold alloys containing 20 percent of copper become hard when annealed below 420° C., while alloys with 50 percent or more of copper remain fairly soft.

If copper-gold alloys are annealed for a long time the copper on the surface oxidizes and the $Cu_2O$ or "fire" that is formed diffuses along the crystal edges and makes the metal brittle. If the "fire" is removed from the surface by an acid pickle the color changes from red to yellow (the process of gilding by mise en couleur).

If the gold in a gold-copper alloy is replaced by silver the hardness is increased until with Au(52)-Ag(22)-Cu(26) the hardness of the rapidly cooled metal is 150. On cold working this is increased to 200. This is as hard as an annealed low-tin bronze. The melting point of this ternary alloy is 890° C.

The Colombians thus had at their disposal an alloy which had a lower melting point than bronze, which could be made almost as hard, and which unlike bronze could be gilded.

The silver-copper alloy was sometimes used in Perú, notably on the South Coast at Chincha. Silver and copper dissolve in each other only to a slight degree and the molten mixture contains two phases, $\alpha$ and $\beta$. At 779° C. (the eutectic temperature), the silver-rich ($\alpha$) phase contains 9 percent of copper, the copper-rich ($\beta$) phase contains 8 percent of silver. At room temperature they are practically insoluble in each other. The $\alpha$ and $\beta$ phases are soft; the eutectic is hard. Hence rapid cooling results in a soft metal; slow cooling or annealing below 779° C. results in a harder metal. If the alloy contains from 6 to 72 percent Ag it consists of copper-rich crystals surrounded by eutectic. If it contains 72 to 95 percent Ag it consists of silver-rich crystals surrounded by eutectic. The presence of a silvery and a coppery phase gives the metal a characteristic mottled or streaked appearance.

A silver-rich alloy containing 7.5 percent of copper (sterling silver) has a Brinell hardness of about 60. On cold working this increases to 183, almost as hard as bronze.

If a silver-copper alloy is annealed too long or heated to a high temperature the copper oxidizes to $Cu_2O$ and this oxide, diffusing along the grain boundaries, makes the metal brittle. If such an oxide-coated alloy is placed in an acid pickle, the oxide dissolves leaving a coating of pure silver. This method of silvering, the equivalent of the mise en couleur method of gilding, was apparently not known.

Bronze (an alloy of copper and tin) was, next to tumbaga, the most important alloy used for casting. It was probably discovered in Bolivia about A. D. 1000 and spread from there to the Peruvian Coast and to Argentina. Later it was introduced by the *Inca* into Ecuador. Copper and tin form a very complex system with many phases. Alpha, or low-tin, bronze contains less than 16 percent tin and is soft and malleable. Its melting point varies from 1,083° C. to about 950° C. On cooling below 525° C. it changes in part to delta bronze (32 percent Sn), which is brittle and very hard. A mixture of alpha and delta bronze is also obtained on cooling bronzes with 16 to 32 percent of tin (m. pts. 950–750° C.) Mathewson (1915) gives an excellent account of the properties of different bronzes.

All South American bronzes are of the alpha type, and contain less than 12 percent of tin. When such bronzes are rapidly chilled, or annealed above 525° C. they remain malleable; when slowly cooled, or annealed below 525° C. they are partly converted to the delta form and become brittle. The malleable bronze can be worked both cold and hot. The brittle bronze can be worked only if frequently annealed at a low red heat. The hardness of low-tin bronze increases with the tin content. Well-annealed copper has a Brinell hardness of 40, bronze containing 5 percent tin has a hardness of about 55, bronze containing 10 percent of tin has a hardness of about 90. Cold hammering increases the hardness of a bronze containing 5 percent of tin to about 200, of a 10-percent bronze to about 275. Low-tin bronzes expand on solidification. The maximum expansion (0.12 percent) takes place with 10 percent tin. Such a bronze melts at 1,005° C. or 80° lower than pure copper. Bronze is more liquid than copper at a given temperature and thus easier to cast.

Nordenskiöld (1921), Mead (1915), and Jijón y Caamaño (1920) have considered in detail the question of bronze in South America, and the relation between the tin content and the type of object. It is found that in Perú, Bolivia, and Argentina the greatest amount of tin is found in ornaments and other fairly complex castings. Objects that should be hard are generally either of copper or contain only a small percentage of tin, and the hardening was brought about by cold hammering. In Ecuador, on the contrary, the greatest percentage of tin is found in objects like axes, knives, needles, and fish hooks that should be hard. They were further hardened by cold hammering.

Native copper containing a high percentage of arsenic is sometimes found in Perú. It is much harder than ordinary copper and in many ways resembles bronze. Objects of this arsenical copper are found in the Chimu region.

Nothing has come down to us about the method of casting metal except the brief description by Raleigh quoted earlier and an account of Sahagun of casting as carried out by the Aztec goldsmiths in México (*in* Saville, 1920, pp. 125–141). Sahagun's account is a fairly clear description of casting by the cire-perdue, or lost-wax, method. This method was without doubt the one used both in Columbia and in Perú. In no other way can intricate castings be easily made. A model of the object was built of wax. This was covered with layer on layer of clay until all the interstices were filled, then clay was packed around the outside. A roll of wax extended from the object to the bottom of a clay cup. After the clay was thoroughly dry the object was inverted and warmed until the wax melted and ran out, leaving a hollow of the same shape as the object, connected to the cup by a small channel. The mold was then placed with the cup upward and heated to a high temperature in a furnace. Molten metal was poured into the cup. It ran down the channel and filled the mold. The mold and metal were then allowed to cool. The clay was broken away from the metal, the plug was cut off, and the object was polished or gilded. Hollow objects were made by encasing a clay core in the wax.

Many hollow figurines and bells have been found with a core of burned clay, though no fragments of clay molds have yet been found. In the *Diaguita* region of Argentina simple stone molds have been found for the casting of axheads, etc., and in the *Chibcha* region of Colombia stone molds for the casting of figurines are also known. In both cases the cast objects involved simple forms and had no filagree or wirework details.

The results of casting by the cire-perdue process are sometimes very complicated and have led some observers to assume that details must have been added by soldering or welding. This is particularly true of some of the *Chibcha* figurines, which often appear to consist of a flat plate to which wires have been fastened. Sections through such figurines have been made and in every case the crystal structure of the metal has extended right across the juncture, proving that they were cast in one piece and involved no soldering or welding. This has also been found to be true of some of the jewels from Esmeraldas made from minute gold beads, and of a cast-copper necklace of Mexican origin.

### ANNEALING

When a metal object is heated for some time to 200 to 400° C., well below its melting point, a change frequently takes place in its crystal structure which alters its properties. This is known as annealing or tempering. This process was probably discovered at a very early period, perhaps even before casting, and not long after metals were first hammered into thin sheets. Knowledge of annealing was widely distributed. For example, bronze *Inca* axheads, knives, pins, etc., from Machu Picchu were found by Mathewson (1915) to have been annealed, some several times. Annealing was most common where the object was to be hammered, for example, the flat head of a pin or the blade of a knife. Apparently, the part to be annealed was placed in a hot fire until dull red, then removed, and hammered. It does not seem to have been too carefully carried out. Likewise tumbaga figurines from Veraguas (Panamá) were found by Root (MS. b) to have been frequently hammered and then annealed.

Annealing was usually resorted to when hammering was found to have made a metal hard and brittle, as with copper and silver. Annealing for half an hour at 400° softens copper and silver and makes them ductile again. It has the opposite effect on tumbaga and bronze. Annealing hardens them. This softening in one case and hardening in another must have baffled the Indian metallurgists if they observed it.

### WELDING

Welding is the junction of two pieces of hot metal by hammering alone, no molten metal being present. To make a good weld the surfaces must be clean and in close contact and heated to a high temperature. Fusion welding is the melting together of the edges of two pieces of metal or their joining by the heating of the adjacent edges and the running of some molten metal of the same kind into the intermediate space. Welding is frequently said to have been practiced in Perú and Colombia, but no certain example of welding has so far been discovered. It must have been hard to do with the primitive equipment used by the Indian metallurgists and it must have been rarely done, if at all.

### SOLDERING

Soldered objects have been found from Guatemala to Bolivia. None are known from México or Argentina. The earliest known examples of soldering are from Mochica and Early Nazca sites. One object from Moche is a gold ear spool with small beads soldered around the rim. The beads are evenly spaced and the junction shows only a trace of solder. It is as fine an example of soldering as anything found in later periods. By the Middle Periods knowledge of soldering has spread up and down the Coast and perhaps to the Highlands. Soldering was also practiced in Ecuador, Colombia, and Central America but it is not known at what period it began to be used. As with other technical processes, much more information must be obtained about the archeology of Colombia and Ecuador before the relation between soldering in these regions and in Perú can be worked out.

It is easier to say what method of soldering was not used in Perú than to tell how it was done. It was not done with a blowpipe and a low melting solder. Analysis of a fragment of solder from a beaded Chimu ear spool shows its composition to be nearly the same as that of the beads. It was not done by use of mercury or an amalgam. There is not the sligłest evidence that anywhere in North or South America mercury was used for either soldering or gilding as Bergsøe has pointed out. Root (MS. a) has analyzed spectroscopically nearly 100 gilded or soldered objects and in no case has any trace of mercury been found. It is true that objects could have been soldered by means of amalgam but there is no reason to think that they were.

The method may have been that thought by Littledale (Maryon, 1936, p. 89) to have been used by the Greeks and Romans. It is an easy method, and one that could have been discovered at an early period. A mixture of gum and some powdered copper salt was applied to the gold surfaces to be soldered, and they were fastened together and allowed to dry. The object was then slowly heated until the gum charred and reduced the copper salt to metallic copper. The copper combined with the gold to form a lower melting alloy which firmly united the two surfaces. On cooling, the joint was as firm as if the surfaces had been welded and it was almost invisible. Since there was only a little copper spread through a large amount of gold, the color and composition of the solder was like that of the object. Some earplugs from Moche have the beads fastened on with gum, others have charred material at the joints, others show dark-colored solder as if they had not been heated quite enough completely to reduce the copper oxide. Other soldered objects showed similar effects. These are consistent with a method of soldering like that of Littledale's.

It is sometimes difficult to tell whether an object is soldered or cast and the chances are that many objects thought to be soldered were really cast by the cire-perdue method. For example the wire-work objects from the *Chibcha* region of Colombia that are often thought to be soldered are really cast.

### BIMETALLIC OBJECTS

Objects made from gold and silver are occasionally found in early sites. A pin half gold and half silver of probably Chavín origin was found at Chongoyape. In Late Periods they are more common. One of the most striking examples of a bimetallic object is the striped gold breastplate from Huarmez on the Peruvian Coast, now in the American Museum of Natural History at New York. The stripes are of yellow gold and a silvery gold. The yellow stripes contain 80 percent of gold, 14 percent of silver, and 6 percent of copper; the silvery stripes 54 percent of gold, 40 percent of silver, and 6 percent of copper. Bimetallic objects have also been reported from Ecuador, *Inca* sites, and Oaxaca.

Complex bimetallic objects were probably made by casting first one part of the object by the cire-perdue method, then incorporating it in a second wax model, and casting on the second part to the first. With careful heating the two parts would fuse without mixing. With simpler objects the two parts might be placed together and heated until fused. A small *Inca* knife with a llama head from Machu Picchu examined by Mathewson had a shank of bronze containing 3 percent of tin and a head much richer in tin which had been cast around it. Objects of two metals are often found made in two parts mechanically joined. An example of this is the bronze knife with the gold pelican inset in the handle, now in the University Museum at Philadelphia.

### METAL INLAYS

This type of decoration is typical of the Late *Inca* Period. Llamas, figurines, knives, etc., were cast of silver or copper with a hollow where the second metal was to go. Strips of gold, silver, or copper were then cut of the proper thickness and width and either hammered in or fastened with gum. Sometimes a colored paste was used to fill the depression instead of metal. The inlays were always simple in shape and with straight edges.

Somewhat similar to this is the setting of precious or semiprecious stones in metal. This was done on the Coast and in the Highlands of Perú, Ecuador, and Coclé. The earliest example known is from a Mochica site. The shell or stone inlay was fastened in with a resinous paste or gum.

### GILDING AND COLORING

There has been considerable confusion regarding the methods of gilding metal objects among the pre-Columbian Indians because of the lack of exact information about the objects themselves. In many cases objects that seem to be of gold or silver are really gilded, in others the type of gilding is incorrectly reported. The only way in which correct information on gilding can be obtained is by examination of a cross section of the surface. Such sections have been made of numerous gilded figurines from Panamá (Lothrop, 1937 a; Root, MS. b.), and of a few objects from Perú (Root, MS. a.) but much yet remains to be done.

There appears to be three types of gilding found in South America. The commonest type, mise en couleur, is found in Oaxaca, Central America, Colombia, Ecuador, and to a slight extent in Perú. Leaf or true gilding is found principally in Perú and Bolivia, and to a lesser extent in Colombia. Wash gilding seems to be confined to Ecuador.

Mise en couleur is not true gilding, as Bergøe (1938) has pointed out, but is rather a coloring of the metal. This method has frequently been described. The object to be gilded is cast from an alloy of gold and copper. It is then treated in such a way as to remove the copper from the surface leaving the gold as a dark film. The gold when heated and burnished forms a solid layer that is indistinguishable from pure gold.

This type of gilding is fairly easy to recognize as the presence in the object of crystals of gold and copper in contact with each other causes rapid corrosion of the copper to a black or red oxide. The result is a thin gold skin on a black core if the alloy contains less than 60 percent of gold. If the tumbega contains 60 to 80 percent of gold, the core is usually of a reddish gold color and fairly brittle. With more than 80 percent of gold the color becomes more yellow, and the metal tougher.

It is not certain how the copper was removed from the surface of the metal. Gomara writes of the Indians of the Santa Marta region of Colombia,

> There is much gold in Santa Marta and copper which they gild with a certain crushed and macerated herb. They rub the copper [tumbaga] with this and put it in the fire. It takes on more color the more herb they apply to it, and it is so fine that in the beginning it deceived many Spaniards. [Gomara, *in* Lothrop, 1937 a, p. 84.]

Other Spanish writers also state that a herb was used. This seems a reasonable method. Any acid plant juice would be satisfactory. Even urine would be sufficient. It would have to soak for a long time, probably until it was dark in color. Then it could be removed, washed, and treated to bring out the gold.

Treatment with plant juice leaves the gold on the surface in a dark, finely divided form. The gold could be consolidated into a film by heating and then burnishing if it were a flat surface like an ax, or perhaps by heating alone if it were a more delicate object like a bell or figurine. That some method was used that did not require force is shown by the fact that many bells, on removal of the clay inside them, were found to be gilded on the inside surface as well as on the outside.

Leaf gilding is as as widely distributed as mise en couleur but is found to the greatest extent in the Chimu region of the Northern Peruvian Coast. Most of the time it appears as a leaf of pure gold or silver covering the surface of a thin copper sheet. Usually both sides are covered, although occasionally one side is gilded. In Panamá, a few cast objects were leaf gilded, although mise en couleur was the usual method in northern South America. No colored castings from Perú have so far been found.

The method by which leaf gilding was carried out is not clear. The leaf is very thin, perhaps 0.01 to 0.10 mm. in thickness. In some cases it is found to double back upon itself, so it must have been applied in the form of the leaf, and, in at least two cases, study of a cross section of the gilded copper sheet shows that the copper was hammered, then the leaf was applied without further hammering and without the application of heat. Much more needs to be done on this.

Bergsøe (1938) described a method of wash-gilding that appears to have been used at Esmeraldas on the Ecuadorean Coast. It may have been used elsewhere but examples from other regions have not yet been recognized as such. A copper object (melting point 1,033° C.) was heated by a blowpipe to about 900° C. and then an 80-percent gold-20-percent copper alloy (melting point 885° C.) was brought in contact with it. The alloy melted and flowed over the surface of the copper. It was then cooled and burnished or plated by the mise en couleur process to bring out the color. This type of gilding causes a roughening of the surface, and the object must be hammered to smooth it. It also causes the surface to become much harder.

Two methods of gilding that have been suggested were not used. One was the lining of the mold with gold leaf before casting. This is impossible as the molten metal would dissolve the gold leaf before it solidified. The second is amalgam plating. None of the many analyses that have been made show any sign of mercury. This confirms Bergsøe's observations (1938) on gilding in Ecuador. Objects can be gilded by mercury, but there is no reason for thinking that this was done in America. It is very unlikely that mercury was ever used in the New World for either gilding or soldering.

## METALLURGICAL REGIONS

The metallurgical processes described in the preceding pages were not used to the same degree in Colombia, Ecuador, and Perú. They were probably known but were not always used. There are two principal metallurgical complexes found in South America: (1) that of Costa Rica, Panamá, and Colombia; (2) that of the Peruvian Coast, and the Peruvian and Bolivian Highlands. These have several subdivisions. In the Antilles and Guiana, where there was little gold, few metal objects are found. These resemble Colombian objects in technique.

In Costa Rica, Panamá, and Colombia the principal metals used were gold and tumbaga (gold-copper). There was some copper used, and perhaps a little silver. The principal processes used were hammering, embossing, casting, leaf-gilding, mise en couleur, and soldering.

TABLE 3.—*Metallurgy of Perú and adjacent regions*

| Metals and metallurgical techniques | Chavín | | | | Early | | | | Middle | | | | Late | | | | Inca |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | North Coast | South Coast | Highland | Diaguita | North Coast | South Coast | Highland | Diaguita | North Coast | South Coast | Highland | Diaguita | North Coast | South Coast | Highland | Diaguita | |
| Gold (Au) | × | ? | ? | ⊙ | × | × | × | ⊙ | × | × | × | × | × | × | × | × | × |
| Silver (Ag) | ? | ⊙ | ⊙ | ⊙ | × | ⊙ | × | ⊙ | × | × | × | × | × | × | × | × | × |
| Copper (Cu) | ⊙ | ⊙ | ⊙ | ⊙ | × | ⊙ | × | ⊙ | × | × | × | × | × | × | × | × | × |
| Electrum (Au-Ag) | ⊙ | ⊙ | ⊙ | ⊙ | ? | ⊙ | ---- | ⊙ | × | × | ---- | ---- | × | × | ---- | × | × |
| Tumbaga (Au-Cu) | ⊙ | ⊙ | ⊙ | ⊙ | ? | ⊙ | ---- | ⊙ | × | ⊙ | ---- | ---- | × | ? | ? | ---- | ---- |
| Silver-copper | ⊙ | ⊙ | ⊙ | ⊙ | ---- | ⊙ | ---- | ⊙ | × | × | ---- | ---- | × | × | × | ---- | ---- |
| Bronze (Cu-Sn) | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ? | ⊙ | ⊙ | ⊙ | ⊙ | ? | × | × | × | × | × |
| Hammering | × | × | ? | ⊙ | × | × | × | ⊙ | × | × | × | × | × | × | × | × | × |
| Embossing | × | × | ? | ⊙ | × | × | ---- | ⊙ | × | × | ---- | ---- | × | × | × | × | × |
| Annealing | × | × | ---- | ⊙ | × | × | ? | ⊙ | × | ? | ---- | × | × | × | × | × | × |
| Casting | ⊙ | ⊙ | ⊙ | ⊙ | × | ? | ? | ⊙ | × | × | ---- | × | × | × | × | × | × |
| Soldering | ? | ⊙ | ⊙ | ⊙ | × | × | ⊙ | ⊙ | × | × | ---- | ---- | × | × | ---- | ---- | × |
| Hammering on molds | ? | ---- | ---- | ⊙ | × | ---- | ---- | ⊙ | × | ---- | ---- | ---- | × | × | × | × | × |
| Gilding (true) | ⊙ | ⊙ | ⊙ | ⊙ | × | ⊙ | ⊙ | ⊙ | × | ⊙ | ---- | ---- | × | ? | ---- | × | × |
| Engraving | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | × | ---- | × | ? | × | ---- | × | × | × | ---- | × |
| Bimetallic objects | ? | ⊙ | ⊙ | ⊙ | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × | ---- | ---- | × |
| Smelting of ores | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ---- | ---- | ? | ---- | ? | ? | × | × | × |
| Inlay (metals) | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ---- | ---- | ---- | ---- | ---- | ---- | × | ---- | × |
| Coloring (mise en couleur) | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ---- | ---- | ---- | ---- | ? | ---- | ---- | ---- | ? |

700 A. D. 900 A. D. 1100 A. D. 1300 A. D.

×=Certainly or probably present.
?=Perhaps present.
Blank=No information available (1944).
⊙=Certainly or probably absent.

The form of the objects varied from culture to culture, but the technique was the same. In Costa Rica, Chiriquí, Veraguas, and Coclé there are a large number of embossed disks, cast animal pendants and figurines, etc. Over half are pure gold, the rest are of tumbaga. Typical objects are figured in Holmes (1887), MacCurdy (1911), Lothrop (1937 a), and Kelemen (1943). The figurines are sometimes very complex but do not seem to have been soldered. They were cast by the cire-perdue method. In the Sinú region of Colombia (lower Cauca Valley) the objects are of the same type as those in Coclé.

In the Quimbaya region, along the middle course of the Cauca River, are found large hollow idols and cups of gold, and breastplates, helmets, crowns, etc. Nearly everything is of pure gold and larger and more massive than in the Central America or northern Colombia. The craftmanship is much better, too. Quimbaya metalwork is figured in Restrepo Tirado and Arias (1893); Crequi-Montfort, Rivet, and Arsandaux (1919); Farabee (1920); Arsandaux and Rivet (1923); Lavachery (1929); Restrepo Tirado (1929); and Keleman (1943).

In the *Chibcha* region around Bogotá the pieces are smaller in size and rather crudely done. They are mostly figurines apparently made of a flat sheet with wire-work details. Most are of pure gold. All were cast by the cire-perdue process, and soldering was not used. *Chibchan* objects are figured in Restrepo (1895); Restrepo Tirado and Arias (1893); Farabee (1920); Arsandaux and Rivet (1923); and Kelemen (1943).

Isolated finds of gold objects have been made in southern Colombia. In technique they resemble Quimbaya rather than *Chibcha* work. Much more work must be done in these regions before the relation of one to the other and to adjacent regions is at all clear.

The metallurgy of Ecuador resembles that of Colombia more than that of Perú. It has been figured by Verneau and Rivet (1912–22), Jijón y Caamaño (1920), Farabee (1921), Saville (1924), and Bergsøe (1937, 1938), but is still in a rather confused state. It is characterized by the use of plainer surfaces and the use of more sheet gold and platinum and less casting. Along the Coast there are found a great number of very small objects made of tiny beads and wires. They seem to have been cast rather than soldered and involve the most delicate workmanship. Tumbaga was used only to a slight extent in Ecuador. Most objects are of pure gold. Copper was used to a greater extent than in Colombia and axheads and breast ornaments were made from it. Silver and bronze when found seem to be of *Inca* origin.

In the Chimu region along the North Coast of Perú and as far south as the Nazca region there are found metal objects of all sorts. These consist for the most part of objects made from beaten gold or silver—plates, cups, dishes, crowns, ear ornaments, etc. There are a few cast objects of gold or copper. Some objects were soldered, notably ear spools ornamented with little beads. Gold and silver leaf was sometimes used for gilding. Leaf was also used for covering wooden objects. Copper was used for axheads, pins, agricultural implements, and small ornaments. All of these things appear at the earliest sites (700 A. D.) The only new processes that appear to have been added in later times were silvering, the use of a silver-copper alloy, and bronze. Bronze seems to have appeared about A. D. 1100 in the Late Periods. The two things not found along the Peruvian Coast except sporadically are objects of tumbaga and gilding by mise en couleur. The work of the Chimu gold- and silversmiths is better than that of Coclésans or of the *Chibchan*, but does not equal the best work of the Quimbaya smiths. Baessler (1906), M. Schmidt (1929), Antze (1930), Lothrop (1937 b), Kelemen (1943), and Root (MS. a) give illustrations of Chimu, Nazca, and Ica work.

In the Peruvian Highlands, from the non-*Inca* sites, are found objects made from gold sheet and decorated with embossing or engraving. There are a few copper pins and needles, and at Tiahuanaco fairly heavy clamps and disks. There was little if any casting, and no soldering or gilding, nor were objects made from tumbaga. Bronze appears only in Late sites. The designs are quite different from those of the Coast. In the *Diaguita* region of Argentina and the *Atacameño* region of Chile much the same type of metallurgy is found as in Bolivia. Examples are shown in Ambrosetti (1905), Boman (1908), and Latcham (1936). Here, however, there is reason to believe that copper axheads, etc., were cast in open molds at an early time. Bronze is also found but was probably not introduced until about A. D. 1100.

The *Inca* metalworkers introduced several new features into Peruvian and Bolivian metallurgy. They disseminated knowledge of bronze, they made greater use of casting, and they invented metal inlays. Most *Inca* objects are simpler in design than corresponding ones from the Coast, and are of thicker metal. Tupus or pins are a distinctive thing. Solid or hollow figurines of men and women or llamas are common. Some of the hollow ones are made of several pieces of sheet soldered together. Some of the solid objects were decorated with inlays of other metals. Objects are made of gold, silver, copper, and bronze. Tumbaga was not known. Gilding was little if ever used.

*Inca* goldsmiths were as skillful as those on the Coast, but their work was less delicate. Ilustrations of *Inca* work are given in M. Schmidt (1929), Bingham (1930), and Kelemen (1943).

## HISTORICAL DEVELOPMENT

It is impossible in the present state of our knowledge to more than guess at the development of metallurgy in South America, as too little is known of the earliest periods in Colombia and the Bolivian Highlands.

It may be that the first working of metal took place on the Peruvian Coast or in the adjacent Highlands, and spread from there northward to Colombia and Central America in the north, and southward to Bolivia, Argentina, and Chile. This would include the hammering of nuggets of pure metal into sheets, embossing, and annealing.

Then sometime about A. D. 700 came the discovery of casting, soldering, and gilding in the Chimu region of the Peruvian Coast. This knowledge spread slowly to Ecuador in the north and to Nazca in the south.

Perhaps at about the same time in Colombia was made the discovery of tumbaga and coloring by mise en couleur. This process spread south as far as Perú.

Somewhat later (before A. D. 1100 ?) in the Bolivian Highlands came the discovery of the smelting of copper and tin ores and the use of bronze. This spread to the south (*Diaguita* region) and to the Coast and was carried more slowly to the north by the *Inca*. Knowledge of bronze had not reached Colombia by the time of the Conquest (A .D. 1530).

Knowledge of Chimu metallurgy was probably caried to México by sea, sometime in the thirteenth century. Knowledge of Colombian metallurgy probably traveled by land somewhat later. Metal objects are found only at late Mexican sites. They are quite different in appearance from those of South America indicating that information about metallurgical processes rather than the objects themselves was carried to México. In the 200 to 300 years of Mexican metallurgy there was little time for new processes to develop. A copper-lead alloy was used in the Valley of México for wire-work bells. Why it was used is not clear. The greatest advance was in the technique of casting, etc. The jewelry of Oaxaca is superior in workmanship to most Peruvian work. It is, perhaps, not as pleasing as much of the Chimu and Ica metalwork, but technically it is much better. If the Conquest had not come when it did, Mexican influence might have had a very beneficial effect on the metallurgy of both Colombia and Perú.

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# RUBBER

By Alfred Métraux

The discovery of rubber is undoubtedly one of the greatest Indian contributions to modern civilization. It was used in South America long before the Conquest. One of the first to mention this substance was Oviedo y Valdés (1851–55, 1: 165), who gives us an involved and quite inaccurate description of the fabrication of rubber balls by the *Taino* Indians of Haiti.

Throughout tropical South America the principal use for rubber was to make balls for the famous games in which the ball was butted with the head or shoulders. Consequently, the list of tribes said to use the rubber ball, prepared by Nordenskiöld (1918) from the literature, may well serve as a basis for mapping the distribution of the use of rubber. In his list are included the *Taino*, the *Otomac*, the Indians of the region of Mainas, the *Cavina* of the Beni River, the *Huari* of the Guaporé River, the *Paressí*, the *Chiquito*, the *Chané*, the *Chiriguano*, and the *Auetö* Indians of the Xingú River. To these should be added the *Apinayé*, *the Mojo*, and the *Guaraní-Itatin* of northern Paraguay.

According to F. X. Eder (1791), the *Mojo* made their balls by coating a round clay core with liquid rubber. When it had hardened, the clay was dissolved by dipping the sphere in water and was removed through a hole. After this the ball was inflated with air, wrapped with a strip of rubber, and smeared with several coatings of liquid rubber. The finished ball weighed about 25 pounds.

A similar procedure is described by Nimuendajú (1939, pp. 62–63) among the *Apinayé*, where the making of rubber balls was a ceremonial operation that took place at the end of the boys' initiation rites. Latex of the mangabeira tree (*Hancornia speciosa*), which was tapped with a stone knife, was smeared on the novices' body and limbs in strips about three fingers' wide. As soon as the liquid had dried, a second and third coating followed. A core, 4 cm. in diameter, shaped out of hard clay from termite nests, was wrapped with the rubber bands by rolling the strips off the boys' bodies. As soon as the ball had attained a certain thickness, the core was knocked into pieces and was removed through a small slit cut into the rubber rind. The hollow sphere was further strengthened by additional rubber strips, which covered the slit and finally yielded a very elastic ball.

Several tribes of the upper Amazon Basin (*Omagua*, *Maina*, *Caripuna*, and *Cacharary*) made rubber syringes, which were provided with a bone mouthpiece to blow parica (*Piptadenia* sp.) into the nostrils, but which were used most often to administer powerful clysters prepared with the same intoxicant. These syringes were made on clay molds. Nordenskiöld (1918, p. 85) surmises that the Indians may have got the idea of making syringes when they observed that they could spout the water with which they dissolved the clay core of their balls.

Otherwise little use was made of rubber. The Indians of the Caiarí-Uaupés and Orinoco Rivers smeared rubber on the ends of the heavy wooden mallets with which they beat their huge slit drums. Rubber also entered into the construction of the famous *Catuquina* telegraph drums. Many Indians of the middle Guaporé (*Amniapa*, *Mequens*, and others) wore rubber bands under their knees or around their ankles. Rubber also was used for making torches or for starting fires when the wood was wet.

During the Colonial Period the rubber industry on the Amazon was in the hands of the *Omagua*, who taught the Portuguese of Pará the methods of its preparation (Martius, 1867, p. 440). They manufactured for sale rubber bottles, bands, and waterproof pieces of bark cloth.

Through Indian influence rubber articles became very popular in the Spanish colonies long before the substance was known in Europe. In the 18th century, the Spaniards used rubber containers, ponchos, and shoes.

The development of the gigantic rubber boom of the 19th century could hardly have taken place without the work of the wild and acculturated Indians of the Amazon Basin. The trees were discovered and tapped by Indians, and the basic techniques used by the Whites had been learned from them. Unfortunately, the dependence of the Whites on the Indians led only to their ruthless exploitation and virtual destruction.

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# WEAPONS

## By Alfred Métraux

The warlike relations of the Whites with most Indian tribes have contributed greatly to the multiplicity of references to weapons from the earliest chronicles to our own day. In many cases weapons are the only aspects of native culture known to us. Travelers have always shown a particular interest in weapons and, for this reason, bows, arrows, and clubs have been collected more frequently than any other objects in South America.

Basically, there were no great differences in the armaments of the various culture areas of the continent. The *Inca* army may have been superior to warriors in the tribes of the forest because of its greater cohesion and discipline, but its weapons did not give it any decided advantages over its less civilized foes. Weapons everywhere were well adapted to the surroundings in which they were used: slings and bolas were used in open country, bows in the forested area. The bow was a relatively secondary weapon in Perú mainly because of the scarcity of suitable woods in vast regions of the Highlands; moreover, the spear thrower and the sling served the same purpose. The use of metal brought about no revolution in the arms of the Andean Indians. Clubs with copper heads and spears with metal points were hardly more efficient than those made of stone or bamboo. Only defensive weapons were better developed in Perú than elsewhere. Helmets and padded armor were a real protection against sling missiles, and the climate made it possible for the warriors to wear such heavy protective garments. Pitched battles waged in the open also made the use of defensive weapons more necessary than they were in the type of warfare carried on by more primitive tribes. Shields, however, were known to most South American Indians north of the Chaco.

### BOWS

**Distribution of bows.**—Most South American people used the bow at the time of the Conquest. Only the *Taino* of Jamaica, the Bahamas, Cuba, and western Haiti, the *Chibcha*, and several tribes living on the tributaries of the upper Amazon did not have the bow (*Awashiri*, *Iquito*, *Záparo*, *Okaina*, *Bora*, *Coto*, *Urarina*, *Ssabela*, *Yagua*, *Can-*

*doshi*). These tribes preferred to fight and hunt with poisoned javelins. The bow was not used by the early Chimu people and was never a popular weapon along the Peruvian Coast. It was known, however, to the people of the Tiahuanaco culture and is often represented on textiles of that period. Stone arrowheads have been found in great quantities at Tiahuanaco. In the *Inca* army the bow was used by the auxiliary troups from the Tropical Forest, but not by the mountain Indians, who were armed with slings and clubs.

Among the *Araucanians* and *Tehuelche* the bow lost much of its usefulness after the adoption of the horse for, unlike North American Indians, the equestrian tribes of the Pampas did not modify their bow so that it could be used on horseback. Bows and arrows went out of use among the *Tehuelche* in the first half of the 19th century. The bow survived among Chaco horsemen, but they employed it only when they hunted or fought on foot. In *Yahgan* culture the bow and arrow occupied a very subordinate position.

South American Indians have known only the self-bow, that is, a bow made of a single piece of wood. Large powerful bows were, as a rule, characteristic of the forest tribes while smaller bows were found in the open steppes (Meyer, H., 1898, p. 554). Extreme lengths occur among the forest-dwelling *Sirionó*, whose bows sometimes measure 12 feet, and among the *Guayakí* and *Caingang*, whose bows are almost as long. The shortest bows are those of the *Ona*, which average 4 feet 4 inches to 5 feet 5 inches. Other bow lengths are listed in table 1.

Most South American bows are symmetrical and slightly curved. In some bows of the Montaña area the bend is scarcely perceptible; it is, however, very pronounced in *Ona* and *Atacama* bows.

**Bow stave.**—In every region of South America the bow stave is made of a few specific woods which experience has shown to have adequate strength and resilience: *Ona* and *Yahgan*, of beech wood (*Nothofagus antartica*); *Chaco*, mainly palo mataco (*Achatocarpus praecox*) but also *Prosopis abbreviata*, quebracho (*Schinopsis lorentzii*), and urundel (*Astronium juglandifolium*); eastern Brazil and along the upper Amazon, chonta palm (*Guilielma gasipaes*). In eastern Brazil, *Astrocaryum ayri* was so widely used for bows that its common name is pao d'arco (bow wood). In the Xingú and Madeira (*Parintintin*) area, bows are made of aratazeiro (an Anonaceae) or of *Tecoma* wood (also called pao d'arco). The *Tupian*-speaking tribes of this area are the only ones who sometimes use palm wood. In Paraguay bows are carved of *Cocos romanzoffianum*, mbocayá totai (*Guayakí*), *Copernicia cerifera*, *Guilielma insignis* (*Cainguá*), or *Tabebuia chrystanha* (*Caingang*).

The Guiana Indians use six different species of wood, of which only purple heart (*Copaifera pubiflora*), letterwood or snakewood (*Brosi-

*mum aublettii* or *Piratinera guianensis*), and *Lecythis* sp. have been identified. Letterwood was in great demand and was traded back and forth. Trade in wood for bows occurred in Perú and in Northwest Argentina between the mountain and forest people. In 1637 the Spaniards met in the *Diaguita* region a party of 300 Indians who had just returned from the Chaco forests with 20 bow staves each.

The fabrication of a good bow requires much time and patience. The *Wapishana* allowed the letterwood to season for months in the shade, then split a rough stave from the heart, covered it with beeswax, and dried it slowly under the roof of the house so that it would never crack. The stave was worked into shape by scraping it with a piece of quartz and then it was smoothed with a shell, a stone, or a tooth. The final polish was given with curatella leaves (*Cecropia peltata*), an effective abrasive. Some Indians (*Warrau*, *Arawak*, Barama *Carib*, *Machushí*, etc.) smeared their bows with rosin.

Before cutting the pao d'arco for a bow, the *Botocudo* test the depth of the black layers; then they cut a piece to the desired length and split it into four portions, of which they keep only the straightest. They scrape away the soft whitish portion, but retain the external layers with the core resilient fibers. The bow is then leisurely planed with a sharp stone. The stave is waxed and the ends are wrapped with bark strips to prevent them from splintering.

*Ona* bows were wrought from the wood of the smallest of the three beech trees (*Nothofagus antartica*).

> From the selected tree they split a fragment 6 or 7 feet long and 3 or 4 inches thick which must come from just beneath the bark where the wood is most elastic. From it the bow was worked down with a scraper. [Lothrop, 1928, p. 71.]

Many tribes of the tropical area store their bows in the humid forest or in water to preserve their elasticity.

**Bow cross sections.**—Father W. Schmidt (1913) attributes great importance to the cross section of bows, regarding it as a feature determined by strict cultural tradition, which may reveal past migrations and cultural contacts. Actually, other factors may affect the shape of the cross section. For example, among the Barama *Carib*, it varied according to the wood used. Washiba or letterwood bows had oval cross sections; those of bipa wood were flat. *Yariyari* bows were round and had no groves on their outer side. The rectangular or illiptic section of the Montaña bow (the so-called Andean bow of Meyer's classification) is conditioned by the shape of the pieces that are split from the chonta palm.

> In making bow staves the inner and softer portion of the chonta stem is first of all removed, whereupon the staves in the rough are split out of the remaining

> cylinder of harder wood. These unformed staves are thus of the flattened shape that prevails in the finished bow. [Rydén, 1941 a, p. 66.]

Moreover, the cross section may vary on the same bow from the grip to the ends. In the same tribes bows may have different types of cross sections. Thus, for example, according to the group, the *Nambicuara* bow may be flat, semicircular, or concave.

Several tribes of Brazil and Paraguay that are regarded as more primitive than the *Tupí* and *Carib*, have bows with a round cross section (*Guató*, *Caingang*, *Guayakí*, *Botocudo*, *Purí*, and *Carajá*), but the same shape also occurs among some Chaco tribes (*Chamacoco*), some *Carib* and *Arawakan* groups, and among the *Cawahíb* of the upper Madeira River, who cannot be classified as "primitive." Moreover, the truly primitive *Ona* use bows with a wedgelike ("tear-shaped") cross section. The Chaco bows, which, in comparison to those of most tropical Indians, are crude, exhibit a wide range of variations in their cross sections. As a rule, they are somewhat flat with rounded edges and the outer side more or less convex, but as one goes from the southern to the northern Chaco the bow staves take a rounded shape. The bows of the ancient *Atacameño* had a semicircular cross section.

Guiana bows were generally convex on the belly while the back or outer surface was concave or flat. The frontal concavity sometimes deepened to a groove in which was held the unused portion of the bow string (Barama River *Carib*). The relation between the two sides of the bow stave were reversed in a few tribes (*Oyana* and tribes of the Içana-Caiarí Basin).

The bows of a great many *Tupí*, *Carib*, and *Arawakan* tribes south of the Amazon (*Tupinamba*, *Guaraní*, *Caingang*, *Purí-Coroado*, *Mashacalí*, *Bacaïri*, *Bororo*, *Apiacá*, *Parintintin*, *Maué*, etc.) are convex on the outer side and flat or concave on the string side.

Some significance has been also attached by Father W. Schmidt (1913) to the fastening of the bowstring. In his opinion bows without shoulders cut at each end to hold the string belong to an archaic culture type. Actually, bows without terminal shoulders occur among some primitive tribes of South America, such as the *Guayakí*, *Sirionó*, *Guató*, *Caingang*, and *Ona*. The extremities of the Chaco bows are sharpened but are without clear cut shoulders to give a fast grip to the string (*Mataco*, *Toba*, *Chamacoco*, *Sapuki*, *Lengua*). According to Father W. Schmidt (1913, p. 1033), the bows of three tropical tribes lack shoulders (*Miraña*, *Yauperi*, *Uashmiri*). The Andean bow also was without any shoulder or notch (Puna de Atacama). Since bows with or without shoulders serve their purpose equally well, it may be surmised that the general shape of the stave determines the presence or the lack of shoulders at the ends. On large bows with a round cross section, a firm grip for the string at both extremities is often provided by a ring and bulge made of creeper strips (*Guató*, *Caingang*). On *Sironó* bows, a few turns of a piece of string prevent the bow string slipping down the stave.

The bows of the forest tribes are of considerable length, averaging from 6½ to 8 feet (2 to 2.4 m.). The size of the bows fluctuates between these two figures within the same area and even within the same tribe. *Cainguá* bows measure from 6 to 8 feet (1.8 to 2.4 m.). The longest bows in South America and perhaps in the whole world are those of the *Sirionó*, which averages from 6 to 9 feet (1.8 to 2.7 m.) and may attain a length of 12 feet (3.6 m.). *Asuriní* bows are short, 4 feet 6 inches (1.62 m.) but unusually wide, 2.3 to 2.7 inches (6 to 7 cm.).

In southern Brazil and Paraguay bows are often entirely or partially wrapped with strips of guembe bark, *Philodendron imbe* (*Guató*, *Guaraní*, *Caingang*, *Botocudo*). Some bows are covered with a basketry casing in the center (*Guaraní*, *Tupinamba*, *Guarayú*, etc.). A great many Amazonian bows are wound with cotton threads at the center or near the ends. Bows are often trimmed with feathers.

The strength of the Indian bow seldom has been ascertained by experimentation. According to Rydén (1941), the *Sirionó* could perforate a wooden board an inch (3 cm.) thick at a distance of about 80 feet (25 m.). The *Guayakí* are said to be capable of hitting the mark at a distance of 300 feet (91 m.).

**Bow strings.**—Throughout tropical South America and the Chaco, bow strings are made of vegetal fibers, generally from the tucum palm or from a Bromeliaceae. In the southern part of the continent, they are made of strips of skin or of sinew (*Tehuelche*, *Araucanian*, *Ona*,

TABLE 1.—*Length of bows and arrows*

| Tribe | Bows | Arrows |
|---|---|---|
| | *mm.* | *mm.* |
| *Arara* | 1.85 | |
| *Asuriní* | 1.62–1.67 | 1.25–1.57. |
| *Bororo* | 1.90 | 1.50–1.70. |
| *Carajá* | 1.80–2.04 | 1.50–1.70. |
| *Chiriguano* | 1.45 | |
| *Guató* | 1.80–2 | |
| *Guayakí* | 1.80–2.10 | |
| *Mura* | 2.64–2 | |
| *Ona* | .91–1.21 | |
| *Oyampí* | 1.75–2 | |
| *Palikur* | 1.82 | |
| *Parintintin* | 1.82 | |
| *Purí* | 1.50 | |
| *Rucuyen* | 1.75–2 | |
| *Shavaje* | | 1.30–1.40. |
| *Shirianá* | 1.89–2.25 | 1.56–2.12. |
| *Sirionó* | 2.43–2.74 | 1–1.6. |
| *Taulipáng* | 1.85 | 1.34. |
| *Tehuelche* | 90 cm | |
| *Toba* | 1.50 | 1. |
| *Tucuna* | 2 | 1.62. |
| Xingú River | 2.30 | 1.50–2. |

*Yahgan*). In the intermediary region of the Chaco strings of both kinds occur, sometimes in the same tribe; the choice between them is entirely a matter of personal preference. *Guató* bows have a string made of skin strips.

The extra length of the string is usually carried back and wound around the stave (Guiana tribes, *Carajá*, *Bororo*, Chaco tribes, etc.). This arrangement does not reinforce the bow, but provides an additional string if the one in use should break. To tighten the bowstring, an Indian slips it off one end, gives it a few twists, and replaces it while he flexes the bow by pressure against his knee.

## ARROWS

The type of head is the main basis for a functional classification of arrows because as a rule the head varies according to the special use to which the arrow is put (figs. 64, 65). In most tropical tribes a different kind of arrow is used for war, for fishing, for hunting different game animals, and even for ceremonial purposes. Feathering, on the other hand, may serve as a criterion only to establish a regional classification of arrows.

**Distribution of arrowheads.**—In the mountainous areas of western South America, along the Pacific Coast from Perú to Chile and in the plains of the southern part of the continent, arrows were, as a rule, tipped with stone heads; in the forested regions of the Orinoco, Amazon and Paraguay Basins, and among the tribes of eastern Brazil arrow points were made of wood, bamboo, bone, or sting-ray spikes. There are, however, a few exceptions. The ancient *Diaguita* of Northwest Argentina used both stone and wooden points. Stone arrowheads have been found archeologically in the sambaquís, or shell mounds, of southern Brazil, in the Guianas, and in the Xingú River basin. Im Thurn (1883, p. 239) states that a *Carib* Indian assured him that "as a boy he used to see bone, shell, or stone pointed arrows in common use." The same author writes that he has seen "arrows, headed with stone, in the possession of some Arecunas." In Perú stone heads of arrows or of spear-thrower darts are found at the Ancón-Supe (early Ancón) level and then disappear. (More complete information on the sequence and distribution of projectile points will be found in the archeological articles in the Handbook, especially vols. 1 and 2.)

**Stone arrowheads.**—No classification of stone heads has been made for South America but a map showing the regions where they have been found has been prepared by Linné (1929, pp. 55–58). The main criteria which differentiate the various types of stone arrowheads are the size, the perfection of the chipping, and the presence or absence of

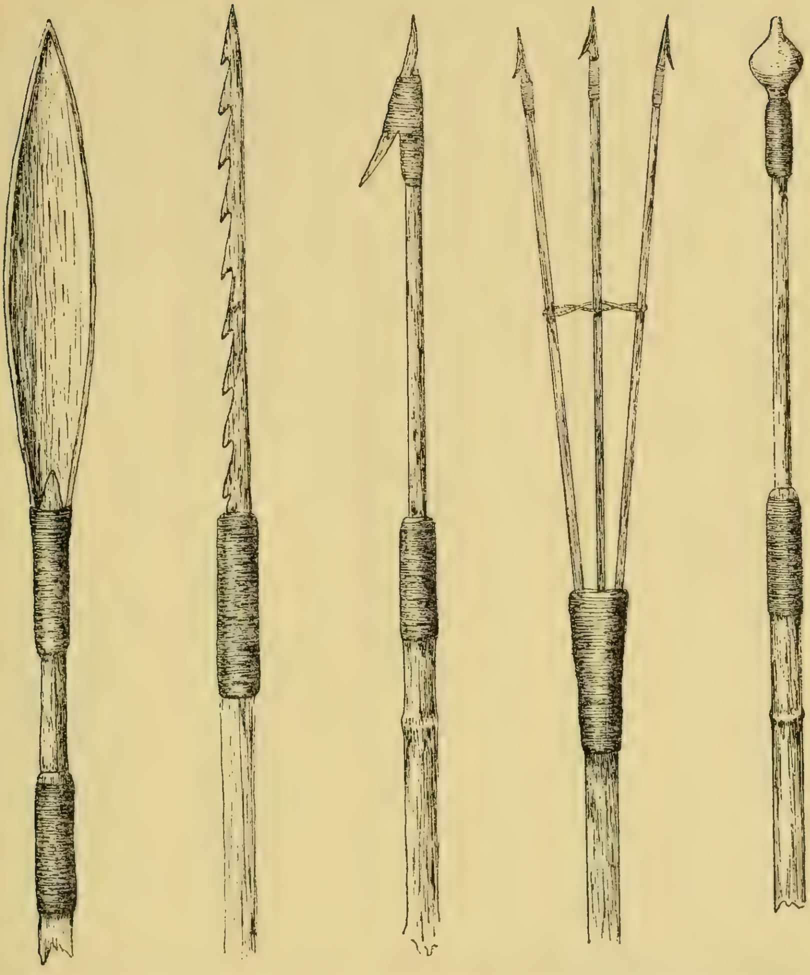

FIGURE 64.—Types of arrow points. *Left to right:* Lanceolate bamboo blade for game hunting; serrate rod for game hunting; barb; triprong, for fish; knobbed head for birds. (After Nordenskiöld, 1923.)

a tang. The best arrowheads are those of the *Ona* and of the *Diaguita* region. The crudest specimens come from Patagonia. Stone arrowheads were chipped by a blunt rounded tool (*Ona*) or by percussion (Patagonia).

On the *Ona* arrows the tang of the head is fastened to the shaft with guanaco sinew. The ancient *Atacameño* fitted their stone points in a notch or pit at the end of a wooden foreshaft, a method used also in ancient Perú.

Flint arrowheads were used by the *Araucanians*, but bone heads seem to have been more common.

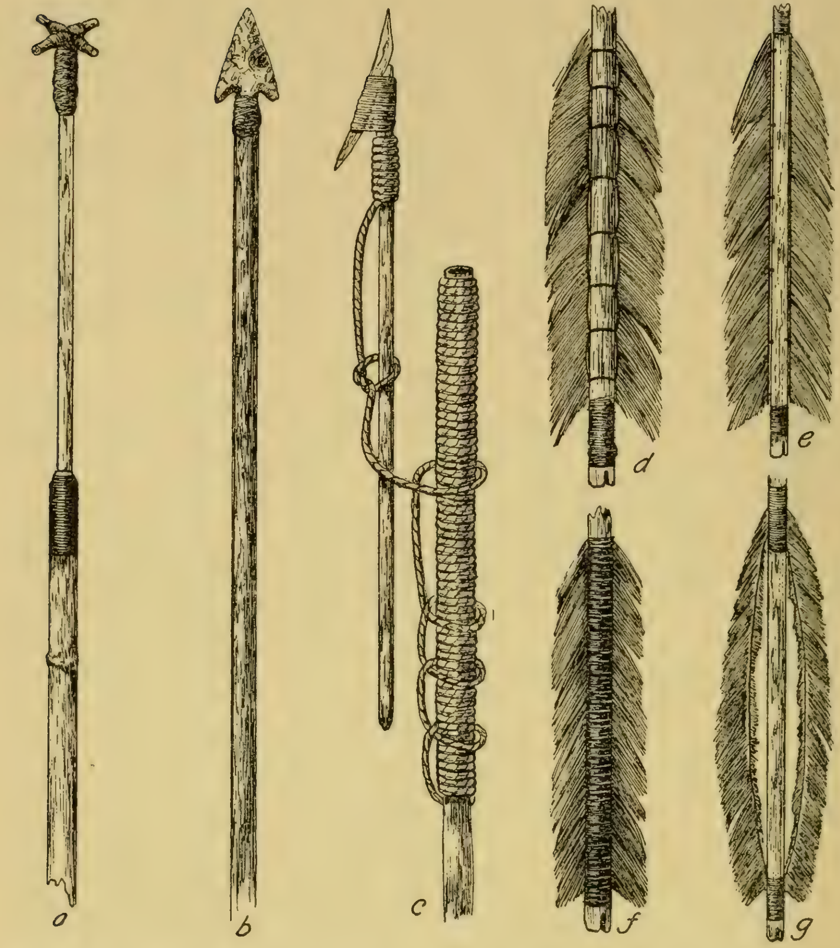

Figure 65.—Types of arrow points and feathering. *a*, Crossed-stick point for birds; *b*, stone head; *c*, harpoon point; *d*, flush feathering; *e*, sewed feathering; *f*, wrapped and cemented feathering; *g*, arched feathering. (*a-c*, After Nordenskiöld, 1923; *e-g*, after Nordenskiöld, 1923.)

**Arrowhead types in the Tropical Forests.**—Five main types of arrowheads are distinguishable in the forested areas.

(1) The first has a lanceolate bamboo point with sharp edges and was used only in warfare and to kill large game animals. The point is fastened to a foreshaft of hardwood, which is laid in a groove at the tang of the point and is fastened with rosin, wax, and a tight binding (of peccary hair among the *Parintintin*). On *Bororo* arrows the bamboo blade is attached directly to the seriba reed (*Avicennia* sp.) shaft. A bamboo arrowhead was generally soaked or dried before being fixed to the arrow. The size of a lanceolate bamboo head varies

from 20 to 70 cm. (*Carajá*, from 30 to 40 cm.; *Parintintin*, 40 cm.; *Paracanã* of the lower Tocantins, 70 cm.). The shape may vary even within a single tribe. Some points are almost flat; some are semicircular in cross section; some have deep notches cut near the base to produce long, sharp barbs; and some have a continuous row of teeth almost to the point. Guiana bamboo heads often have a guard directly under the point that prevents too deep a penetration of the arrow and causes it to fall to the ground before the wounded animal breaks it when dashing into thick bush.

(2) The second type is a pencillike wooden rod inserted directly into the arrow shaft. Its cross section may be round, triangular, rectangular, or diamond-shaped. Some are carved in the shape of successive abutting cones (*Parintintin*). Others may be smooth or jagged along one or both sides. Many specimens, especially fishing arrows, have a bone splinter or a string-ray spine fastened against the proximal extremity of the rod to form a sharp barb. In most cases, however, the needle-sharp splinter or spine is laid obliquely in a groove at the tip of the wooden head to serve both as point and barb. Some arrows, which are often classed in a special category, have a tubular bone—generally a monkey humerus—with a sharp point and a beveled, flaring base, fitted over the tapered end of the wooden shaft and cemented with wax (*Cayapó*). All the arrows in this second category are used for hunting large and small mammals and birds, and also for fishing.

(3) The third type of head consists of two or three pointed rods inserted into the arrow shaft. This type is employed mainly for fishing (*Parintintin*), but in some tribes (*Chiriguano*), it is also used for shooting large birds. Generally, each rod is provided with a sharp lateral barb of bone or some other material. Triprong fishing arrows are common in the Guianas. The *Panoan Chama* of the Ucayali River use arrows armed with a bunch of seven points to shoot small fish, and the *Tupí-Cawahíb*, arrows with four to seven points. The *Chané* fishing arrows which bristle with cactus thorns are a local variety of the same type.

(4) The fourth type has a harpoon head, and is used principally for fishing. The point has a hollow tang which is loosely fitted over the foreshaft and is connected to the shaft by a recovery string. The shaft serves as a float. Arrows with heads of this kind are, in fact, small harpoons discharged with a bow. Some of the *Chama* harpoon arrows fall into three parts when they have struck their mark. In certain cases the recovery string is attached to the fisherman's wrist.

The harpoon head of the *Guató* was of bone with a single barb. It was fitted loosely into a funnel made by wrapping cipo around the end of the foreshaft and was attached to the shaft with a string.

Many Guiana Indians and the *Chaké* of eastern Colombia employ harpoon arrows to shoot large game. The dragging shaft prevents the animal's escape into the thick bush.

(5) The fifth type is the blunt-headed arrow used to shoot birds. Instead of points, these arrows have knobs. The Indians give the following reasons for the advantages this type of arrow has over others for this purpose: A wide knob is more likely to kill or stun a bird than is a sharp point that might strike in a nonvital part or slide off; a blunt head does not draw blood and so does not spoil the plumage; birds hit by blunt arrows can be captured alive; when the arrow misses the mark, it does not stick in a branch.

The head of the bird arrow is ordinarily a conical or round piece of wood inserted into the shaft and often is provided with a protruding peg or point. Some Guiana bird arrows are elegantly carved and have flanges and sharp edges which enhance their appearance. The *Taulipáng* wedged the butt end of a deer horn into the split arrow point to form a knob for their bird arrows. For some bird arrows the Indians (*Botocudo*, *Paressí*, *Cayapó*, *Purí*, *Tupinamba*, *Guató*) use reed stems as the shaft and the bulging roots, carefully trimmed, as the round head.

The *Yuracare*, *Maué*, and several Guiana tribes tip their bird arrows with two or four short, cross sticks, lashed to a rod stem. Other tribes make the head of their bird arrows with a lump of wax. An ordinary arrow can also be transformed into a bird arrow by placing a piece of gourd over the point (*Mbayá*).

Bird arrows seem to be rare or lacking altogether in northwestern Brazil and in the Purús River basin, where birds are shot with the blowgun.

**Whistling arrows.**—Many tribes place a perforated nut under the arrow head to produce a whistling noise when the arrow flies through the air (*Arara*, Tapajóz River, *Paracanã*, *Yuruna*, *Shipbo*, *Amanayé*, Guaporé River, *Rucuyen*, *Guayakí*, etc.). Copper arrowheads with a hollow bulb in the middle have been found in Perú. (See Rydén, 1931.)

**Arrowshafts.**—In tropical South America, arrowshafts are made of uba stalks and taquara da frecha (*Gynerium sagittatum*), and camayuva reeds (*Guadua* sp.). Cane for arrows is often cultivated. Many Chaco Indians cultivate the Caña de Castilla (*Arundo donax*), which was imported into South America at an early date and which in many places has supplanted the use of native reeds. Some *Bororo* war arrows had serib (*Avicennia* sp.) reed shafts. Even in the same tribe different materials might be used for the shafts of arrows used for different purposes. *Parintintin* fishing arrows, for example, have

*Gynerium* shafts, while war and hunting arrows have shafts of *Guadua* sp.

The end of the forshaft is set directly into the shaft and is cemented with rosin or wax. Most Guiana Indians compress the section of the shaft which serves as a socket for the foreshaft with a special device which consists of a cord with two pieces of wood or two turtle bones attached at the ends. The operator holds one end between his toes, winds the cord a few times around the shaft and pulls the other end with his right hand, while with his left hand he rolls the shaft uniformly back and forward. A similar procedure is followed when a nock is inserted into the proximal end.

The end of the shaft is wound with a bark strip or cotton thread which extends to the lower part of the inserted wooden head; geometric designs are often produced by crossing the threads of the binding.

In Tierra del Fuego, arrow shafts were wrought of crooked wood which was heated and bent with the teeth until perfectly straight. The shaft was then scraped and polished with a grooved stone. The feathers were attached to the shaft with the skin muscles of the guanaco lashed in spirals.

**Feathering.**—With the exception of the *Cuna*, *Chaké*, *Macú*, and a few other tribes, all South American Indians attached feathers to the butt of their arrows to facilitate their flight through the air. Only fishing arrows are, for obvious reasons, without feathering.

The classification of types of feathering in South America established by H. Meyer (1898) has been so often quoted that it is necessary to reproduce here the definition of the six main types of feathering he found in Brazil, although it is open to criticism in several respects:

*East Brazilian or Ge-Tupí feathering.*—"Two feathers unchanged, seldom halved, are fastened at either upper and lower ends to the shaftment opposite each other with thread, fiber, or cipo bast. Frequently these wrappings are laid on in patterns or have an ornamentation of little feathers added."

For this definition to be adequate, it should be added that the two feathers generally are twisted in a spiral so that they have a propellerlike appearance.

*Guiana feathering.*—The feather is cut at its base and tip and the barbs are removed from one side. The wrapping seizes the two halves at regular intervals and takes ornamental patterns.

*Xingú sewed feathering.*—Two half feathers are stitched to the shaft opposite each other through perforations. The ends are seized fast with plain or patterned lashing.

The "sewed" feathering had a very limited distribution. It was used by the tribes of the upper Xingú (*Bacaïri, Auetö, Ca'mayura, Trumaí*), by the *Bororo, Cayabí, Huanyam and Paracanã* (lower Tocantins), and *Asuriní.*

*Arara feathering.*—Two long half feathers, which, in addition to the end seizings, are held down by narrow wrappings of thread at short distances apart. At the nock the wrapping is done in beautiful patterns.

*Peruvian or cemented feathering.*—The two feathers of the cemented feathering are separated from the midrib with only a thin portion of the quill remaining. They are bound fast to the shaftment in a close spiral with thread or yarn, and, to increase the hold on the shaft along the feather, the shaftment is covered with black or brown pitch.

*The Maué feathering.*—Like the east Brazilian feathering, this type has two entire feathers bound on above and below. At the base of the shaft, however, a nock piece or footing is set in.

Meyer's classification, which has been accepted by many specialists of South American ethnology, needs to be revised and established on a single principle, for the features that Meyer considers to be characteristic of his five main types have been selected arbitrarily and are sometimes entirely unrelated. In three cases he regards the nature of the binding as a distinctive trait; in one case, the presence of a nock; and in still another, the addition of a subtance to the binding.

Our present classification will rest exclusively on the method of attachment of the feathers. If the position of the feathers is considered, two main types of feathering may be distinguished, as follows:

In the first type we have shaftment with two feathers tied at both ends and slightly arched and twisted propellerlike. This type corresponds to the "Eastern Brazilian" or "tangential feathering" of Meyer, and will be called "arched feathering" (stegfederung) (*Tupinamba*, *Cainguá*, *Guarayú*, *Cayapó*, *Carajá*, *Parintintin*, *Apiacá*, *Mashachalí*, *Yuruna*, *Bororo*, *Botocudo*, etc.).

In the second type the feathers, split along the quill, are applied flush to the shaft. This type of feathering will be called "flush." It may be divided into various subtypes according to the method of binding employed:

(*a*) The threads may be wound around the shaft from one end to the other or they may be wrapped at close or far intervals. This subtype is called "wrapped feathering" and corresponds to the "Arara" and "Guiana" feathering of Meyer (*Apiacá*, *Mura*, *Maué*, *Parintintin*).

(*b*) The feathers may be sewed by threads passing through perforations across the shaftment. This is the "sewed feathering" and corresponds to Meyer's "sewed Xingú feathering."

(*c*) The binding may be smeared with wax or rosin. This is the "cemented feathering" and corresponds to Meyer's "Peruvian cemented feathering."

Further distinctions may be made in regard to the size or shape of the feathering. In the arched feathering, one vane is removed or is greatly reduced by burning; generally, the remaining strip presents a toothed edge. In flush feathering, the feathers are halved along the quill and the remaining vane is used either with its full length or cut up and down so that only the central portion is left.

*Ona* feathering belongs to the subvariety (*a*) of our second type, but many details mark it off from all other featherings. The two half-feathers are lashed radially to the shaft with spirally wound sinew or gut. Except in Tierra del Fuego, the feathers are usually fastened to the shaft with cotton threads, often of several colors, or with thin strips of guembé bark. In many tribes the threads are crossed or wound to produce ornamental effects. W. E. Roth (1924, p. 124), writing about the Guianas, describes four types of feather bindings which he names after their final appearance: diamond, claw, bar, and spiral. According to Ahlbrinck (1924, p. 220), the *Carib* of Guiana had 10 different feather bindings, called, scales of kariwaru (*Hoplosternum*), ananas, tracks of kotaka (*Aramides cayanea*), etc.

Oviedo y Valdés (1851–55, 2: 40) states that the arrows of some Patagonian Indians carried three instead of the usual two feathers. Nordenskiöld (1925 a) has made much of the fact that a *Cainguá* arrow published by Ambrosetti likewise had three feathers; actually *Cainguá* arrows had the typical "arched-feathering" so widespread in eastern Brazil. Arrows with more than two feathers occur now and then in tribes which otherwise conform to the classic types of feathering. The *Moré*, for example, attached three or even four feathers to some of their arrows so that they would rotate faster in their trajectory. To single out these exceptions as survivals of a time when the feathering of South American arrows was more like that of North American ones is to take undue advantage of the historical method. Moreover, several types of featherings may be found in a single tribe. Thus, the *Tupí-Cawahíb* have arrows with flush, sewn, and arched feathering. The *Apiacá* used arrows both of the arched and flush types. Krause (1911, p. 264) explains the presence of several different kinds of arrows within a single tribe by the widespread Indian custom of exchanging arrows as signs of goodwill and friendship. However, such an explanation cannot apply to all cases. The feathering may also vary with the function of the arrow; for example, the large war arrows of the *Parintintin* and *Mura* have flush feathering, while their arrows for hunting small game have arched feathering.

**Nocks.**—The butt end of the arrow is generally notched to prevent its slipping from the string. If the shaft reed is a *Gynerium* and consequently likely to splinter, a grooved wooden plug is inserted in the shaft (*Shirianá*, *Chocó*, *Palicur*, *Paracas*, etc.). The *Guató*, instead of notching the brittle uba reeds, insert three small wooden splinters in the butt of the arrow. The nock of the arrow is always reinforced by a tight wrapping, generally of cotton thread or of strips of bark, irrespective of the presence or absence of a peg.

**Arrow release.**—As there are few descriptions of the methods of South American arrow release, it is impossible to map their distribution satisfactorily. Moreover, in a single tribe, such as the *Ona*, the archer ordinarily may shoot with the primary release, but use the secondary or tertiary type if he wishes to shoot far. The three main types of release are as follows:

*Primary release.*—The butt of the arrow is held between the thumb and index finger. Used by Guiana tribes, Indians of the Xingú Basin, *Palicur*, *Siusí*, and *Ona.*

*Secondary release.*—The butt is held as above, but the string is pulled back with all the remaining fingers. Used by the *Carajá*, *Tupí-Cawahíb*, *Shavaje*, *Ayomano* of Venezuela, and Chaco Indians.

*Tertiary release.*—The butt is held between the index and middle fingers and the string is pulled with the remaining fingers. Used by *Tupí-Cawahíb*, Xingú tribes, *Shavaje*, *Moré*, *Guató*, and *Chaké.*

**Wrist guards.**—Usually the archer protected his wrist against the impact of the string by wrappings of strings of cotton or human hair (*Guató*, *Cainguá*, *Guayakí*, *Parintintin*, *Carajá*, *Shavante*), with a leather bracelet (*Chorotí*, *Mataco*, *Ashluslay*, *Goajiro*), with a strip of bark cloth (*Moré*), or with a wooden guard (*Abipón*, *Mocoví*).

**Poisoned arrows.**—Poisoned arrows were not so widely used by the Indians as is commonly assumed from the exaggerated accounts of the Spanish conquistadors. Curare, which is the most deadly poison known to the Indians, is prepared by relatively few tribes though it is traded throughout wide regions. The descriptions of the effects of poisoned arrows on wounded Spanish soldiers do not suggest the use of curare, and it is not improbable that this deadly substance spread in post-Columbian times to regions where it was formerly unknown. The Indians who in the 16th century lived along the coast of Venezuela and the Gulf of Urabá had the reputation of concocting terrible poisons. The basic material is said to have been the juice of the manzanilla fruit (*Hippomane mancinella*), but the statement has been doubted by modern authorities. Rochefort (1658, p. 471) also mentions manzanilla juice as the poison with which the *Island Carib* smeared their arrows. Orellana was convinced that the soldiers whom he lost at the mouth of the Amazon had been wounded by poisoned arrows.

The Indians of the Apáporis and the Caiarí-Uaupés use curare to poison their arrows. The heads of these arrows consist of a round stem notched at the end to hold a piece of hardwood loosely fastened with rosin and strings. This point is smeared with curare and sometimes is provided with circular incisions.

The tribes that poison their war and hunting arrows are the *Macushí*, *Makú*, *Tucuna*, and, south of the Amazon, the *Kepkiriwät*, *Amniapä* and *Pawumwa* of the right side of the Guaporé River, the *Nambicuara*, and the *Paressí.* In the 16th century, the *Chiquitos* were greatly feared both by their neighbors and by the Spaniards because of their poisoned arrows. It is probable that, like the modern tribes of the area, they extracted curare from a *Strychnos.* The

*Araucanians* poisoned their arrows with the juice of the coligerey root (*Colliguaja odorifera*).

Tribes that use poisoned arrows cover their arrowheads with a sheath as a precaution against accidents and also to prevent water from washing off the coating of poison.

**Quivers.**—A sharp distinction should be made between quivers for arrows shot from bows and those for blowgun darts. The latter have the same distribution as the blowgun and will be described below. Quivers for arrows have a limited distribution—mainly in the southern tip of the continent among the *Ona*, *Alacaluf*, *Chono*, *Tehuelche*, *Araucanians*, *Diaguita*, *Charrua*, *Abipón*, and *Mocoví*.

*Ona* quivers were made from the hide of the hair seal.

> To manufacture them a hide was cut in a rectangular pattern of suitable size and shape. This was doubled and sewn up the side, while at the bottom a small oval piece of hide was inserted and stitched into place. Were it not for this flat bottom the delicate glass points [made in post-Columbian times] would have been jammed against one another and thus become broken. On the upper end of the quiver there is a small loop of hide by which it was hung out of reach of dogs when in camp. [Lothrop, 1928, p. 78.]

Similar quivers were used by the *Yahgan* and *Alacaluf*. The *Tehuelche* seen by the early navigators did not have any quivers, but "inserted their arrows in a narrow woven fillet encircling the head so that they projected above like a crown" (Lothrop, 1928, p. 78). However, quivers are mentioned in more recent descriptions of these Indians (Outes, 1905, p. 254). Hide quivers were used by the *Araucanians* (Medina, J. T., 1882, p. 134) and the ancient *Atacameño*, as is apparent from a skin quiver found at Rio Loa (Montell, 1926, pp. 10–12). Azara (1809, 2:18) states that the ancient *Charrua* carried their "small arrows in a quiver suspended from their shoulders." Quivers are not used by modern Chaco Indians and are reported only once for the *Abipón*, by Dobrizhoffer (1784, [1822] 2:398), who says: "The quiver is made of rushes and is adorned with woolen threads of various colours." A quiver of the same type was found by Baucke (1935, pl. 16) among the weapons of the *Mocoví*. A long strap attached to the quiver suggests that it was slung from the shoulder.

The arrows of the tropical Indians were too long to be comfortably carried in a quiver suspended from the shoulders. This probably explains the rare occurrence of quivers north of the Chaco. Quivers, however, were necessary as a protection against one's own poisoned arrows.

Nordenskiöld (1931, pp. 84–85) lists the following tribes north of the Amazon who supposedly had quivers: *Motilones*, *Menimehe*, *Guahibo*, *Guypunavi*, *Corbago*, and the Indians of Trinidad. The *Menimehe*, who poisoned their arrows, carried them in wicker quivers, in bamboos with the partitions scraped out, or in more elaborate containers made of bound bamboo strips (Whiffen, 1915, p. 117). The quiver also is mentioned among the *Guahibo*, who used poisoned arrows (Rivero, 1883, p. 223), but is not described. The allusion to a quiver full of darts in Juan de Castellanos' poem (1850, p. 95) hardly is valid evidence for the occurrence of quivers among the Trinidad Indians. The cylindrical baskets in which the *Motilones* stored their arrows at home cannot properly be called a quiver (Bolinder, 1917, p. 42). The *Corbago* Indians, like the ancient *Tupinamba*, put their bows and arrows in casings, probably as a protection against worms or humidity.

### THE PELLET-BOW

The pellet-bow is aptly described by Nordenskiöld as a combination of a sling and of a bow (fig 66). Instead of arrows, it projects small clay pellets which are placed on a fabric cradle stretched between the two strings of the bow. A small forked stick keeps the strings apart. When shooting with the pellet-bow, the strings must be pulled aside from the stave.

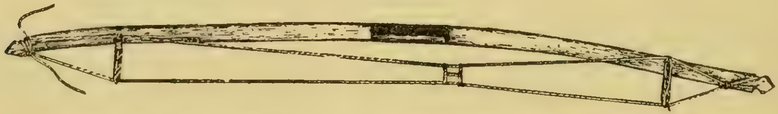

FIGURE 66.—Pellet-bow, *Guató*. (After Schmidt, M., 1905, fig. 72.)

The pellet-bow has a peculiar distribution in South America. It is found among all the Chaco tribes, among the *Chiriguano*, *Yuracare*, *Churapa*, *Guató*, *Mashacalí*, *Cainguá*, and *Carajá*, and among the Caboclos of eastern Brazil. Nordenskiöld (1929 b, p. 56) is inclined to consider the introduction of the pellet-bow as post-Columbian, because of the resemblance between Hindu and South American pellet-bows, both of which have a thick round grip. He surmises that it spread by means of Portuguese who had become acquainted with it in India. The pellet-bow is, in fact, a favorite toy among Mestizo children; Krause (1911, p. 274) points out that the *Carajá* borrowed it from the Caboclo children. Moreover, our many and detailed authorities on the ancient Indians of the Brazilian coast never mention this weapon, which became so common among their acculturated descendants.

### THE SPEAR THROWER[1]

The spear thrower (fig. 67) is an old weapon in South America. It was found in Perú in several cultural horizons from Nazca to the *Inca* period. It was known to the builders of Tiahuanaco, and the central personage carved on the gateway of the Sun probably holds a spear thrower in his right hand. The same weapon is frequently represented on Nazca and proto-Chimu (Mochica) vases. Some of the troops of the *Inca* were armed with spear throwers. Though in the 16th century it was still the favorite weapon of the Ecuadorian natives, it was certainly less used in the *Inca* Period than in earlier times.

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[1] The spear thrower is commonly called atlatl, its *Aztecan* name.—EDITOR.

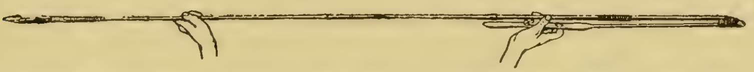


FIGURE 67.—Spear thrower and dart. (After Krause, 1911, fig. 127.)

All South American spear throwers belong to the "male type," i. e., all have a prong or spur on the distal end which engages the butt of the dart so that in South America this weapon can be differentiated only on the basis of minor details, such as the presence or absence of a hole near the distal end or of a supplementary prong. The known specimens fall into three main categories: the two first were represented mainly in ancient Perú; the third type was restricted to a single tribe of northeastern Brazil.

The distribution of spear throwers of the first category is limited to ancient Perú. It was a stick from about 15 to 24 inches (38 to 60 cm.) long with two hooks or prongs inserted in grooves at each end and lashed with cotton twine or sinew. The hook on the distal end served to engage the butt of the missile; the second prong, turned backward and placed near the other end, was intended for the forefinger that was crooked over it. Thus, the hand was forced into the most convenient position to hurl the dart. The hooks for engaging the darts were of stone, bone, shell, or copper in conventionalized shapes of birds or human figures.

A great many spear-thrower hooks have been discovered in Ecuador, including a specimen covered with an artistically wrought gold plate. (See Verneau and Rivet, 1912–22, 1: 200–203.) Spear throwers of the same type were used by the *Chibcha*, the tribes of the Cauca Valley, and perhaps by the ancient *Cueva* of Darién.

The *Taino* spear thrower belonged to the Peruvian and Colombian type. It consisted of a straight staff with a rear hook or, more correctly, an oblique fish bone against which rested the butt of the dart ("pececito con su muesca donde asentaba la vara como dardo"). A braided loop was attached to the proximal end of the weapon (Lovén, 1935, pp. 441–446).

In the past, the *Jívaro* had a type of spear thrower which, judging from Pigorini's design (1881, pl. 1, fig. 4), was typologically related to the Peruvian and Ecuadorian specimens. It consisted of a straight stick tapering from the butt to the tip where the spur was lashed; a perforation near the proximal end through which a string was passed, permitted the implement to be fastened to the wrist (Stirling, 1938, p. 86).

Evidence of the use of the spear thrower was found in the Second Pre-pottery Period and in the pottery layers of the north Chilean Coast. This weapon also was seen in the hands of the *Araucanians* by the conquistadors of Chile (Mariño de Lovera, 1865, 6: 46).

That the spear thrower was used in Northwest Argentina by the *Atacameño* and *Diaguita* is shown by figures on vases, especially on those of Los Borreales. The spear thrower so represented seems to be provided, like the Andean specimen, with two hooks. (See Vignati, 1936, pp. 356–358; and Márquez Miranda, 1942–43, vol. 4, pp. 52–56.) A beautiful spear thrower from Atacama has been recently published by Casanova (1944, p. 117). It is a broad stick with a shallow groove, a bone hook, and a handle.

On spear throwers of the second category the shaft widens near the grip to allow for a hole for the forefinger. Only two specimens of this kind have been unearthed in Perú; both were found at Nieveria and belong to the first civilization of Lima. They are almost identical to those used by the modern *Carajá* and by most Xingú River tribes; therefore, Krause has called this type "Amazonian."

The spear thrower of the *Auetö*, *Camayura*, and *Trumaí* is a round stick which widens into a flat, wide grip. The Xingú River specimens measure about 28 inches (70 cm.). The major width of the grip, which is concave on both sides, is 2 to 2½ inches (5 to 6 cm.) and its length is about 6 inches (15 cm.); it has a perforation for the forefinger. The hook at the distal end is formed by a wooden stick or piece of bone fastened obliquely to the shaft. Similar spear throwers occur among the *Carajá*, *Shavaje*, and probably among the *Tapirapé*. Among the Xingú tribes the spear thrower—formerly a war and hunting weapon—has been displaced by the bow and arrow, and it survives only as a sporting weapon used in a game or as a dance accessory (Steinen, 1894, p. 232).

The spear thrower darts of the *Camayura* and *Auetö* are made of uba reed and often have a carelessly fastened feathering. They are tipped with blunt stone heads or sometimes with wooden knobs like bird arrowheads. *Carajá* spear thrower darts are made of canna brava and, like the Xingú River specimens, they are tipped with stone or heavy palmwood knobs, but they lack feathering (Krause, 1911, p. 273).

To cast the dart the *Carajá* rest it on the spear thrower with the butt end against the hook. The index finger goes through the hole, the dart is held between the thumb and middle finger and the two remaining fingers rest against the grip under the dart. The dart is supported by the left hand. The *Carajá* use the weapon to play the "game of the *Tapirapé*"; it is probable that they received the spear thrower from the *Tapirapé*, who in turn may have borrowed it from the Xingú tribes (Krause, 1911, pp. 273–274).

The spear thrower of the Purús River was a small board with a narrow handle and a hole for the fore finger. The spur was lashed at the distal end.

The Indians of the upper Amazon (*Mainas, Cocama, Omagua*) fought against the first Spanish explorers with spear throwers; 18th-century *Omagua* and *Cocama* still used it, mainly to hunt turtles. A *Cocama* museum specimen closely resembles the descriptions of early travelers. It is a thick board, flat on the upper side and convex underneath, that widens toward the center, where it has a pit for the fore finger. The peg is lashed at the end of a groove running the full length of the shaft. The same type of spear thrower, characterized however by a bulging distal end, occurred among the Indians of the Cauca Valley, Antioquia, and the upper Magdalena. A spear thrower is also mentioned but not described among the *Panobo* (Tessman, 1930, p. 11).

The *Mojo* and *Canichana* used the spear thrower for hunting and warfare. Eder (1791, p. 287) describes the spear thrower of Mojos as a tube (capsula), which must mean a halved section of bamboo; according to a picture in Eder, the *Mojo* spear thrower was a narrow board with a hook to engage the butt of the dart. The *Mojo* discarded this weapon soon after European contact.

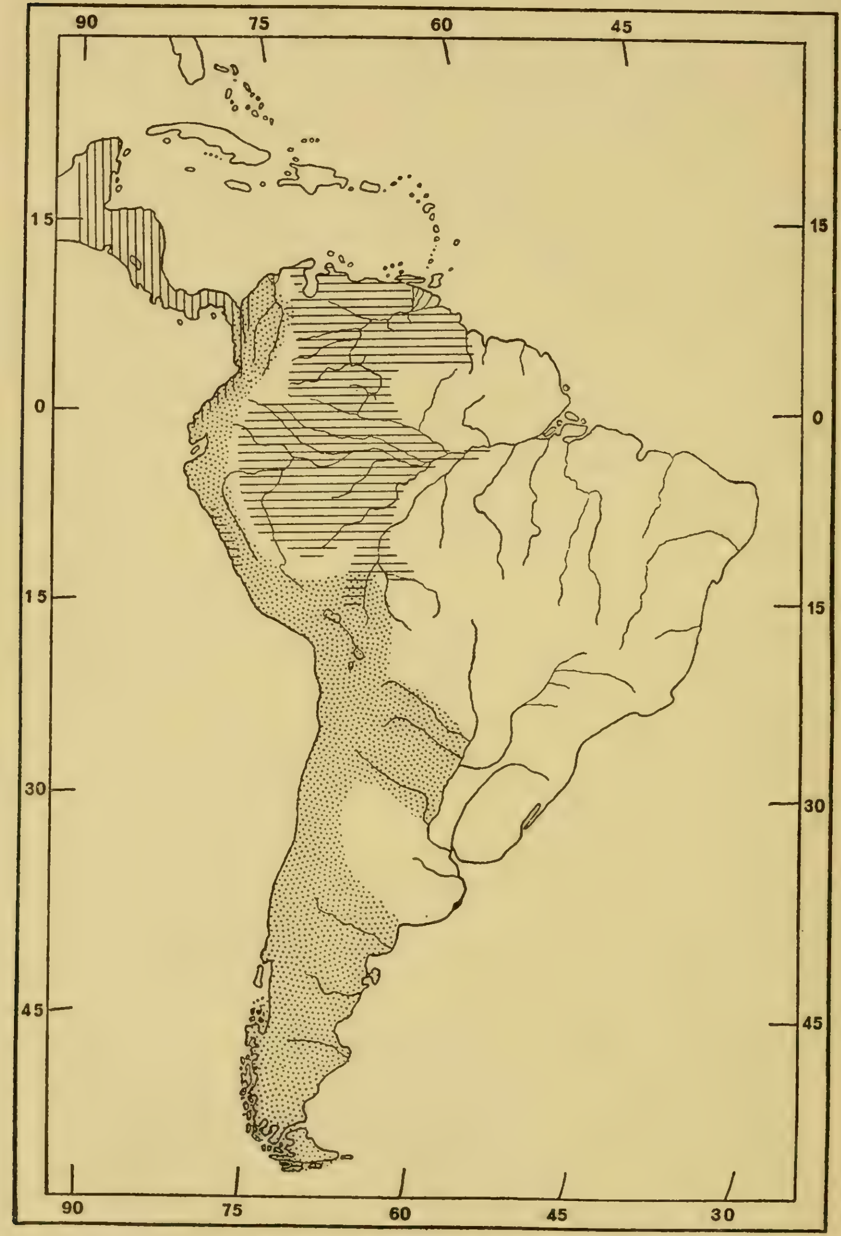
In the 17th century, the *Caripuna* and *Quirina*, of the Purús River, had beautifully carved spear throwers which they traded to other nations (Acuña, 1891, p. 145).

The third category of spear thrower is represented by a single specimen in the Museum of Copenhagen, collected in the 17th century from the *Otschukayana*, a "*Tapuya*" tribe of eastern Brazil. It consists of a tapering piece of wood with a deep groove to receive the dart, which is engaged by a horizontal peg lashed to the proximal and narrower end of the instrument. It measures about 35 inches (88 cm.) in length and 1½ inches (4 cm.) in width. It is mentioned by Herckman and has been drawn by Eckout (Bahnson, 1889).

The spear thrower (varas tiraderas) has been attributed by Oviedo y Valdés (1851–55, vol. 2) to the *Chana* and *Timbú* of the Paraná Delta, and a spear-thrower hook was found archeologically by Lothrop (1932, fig. 74) in a region formerly occupied by the *Querandí*. The mouth of the Río de la Plata probably is the southernmost limit of the spear thrower in South America.

## THE BLOWGUN

**Distribution.**—Although the blowgun (map 4) has attracted wide attention among modern travelers, it is rarely mentioned by


90
75
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Map 4.—Distribution of the sling (*stipple*) and blowgun (with poisoned dart. *horizontal hachure;* with clay pellet, *vertical hachure*).

16th- and 17th-century writers. There is a reference to its use in Colombia by Cieza de León and, according to a report of the Maldonado expedition to eastern Bolivia, it was used by an Indian tribe located approximately in the Beni Basin. Heriarte refers to the blowgun in the Province of Aguas, somewhere on the upper Amazon, and both Oviedo y Valdés and Simón speak of the "zerbatana" of the natives around Lake Maracaibo (*Bubure*?). According to Saabedra (1620) and Figueroa (1904, p. 95), who were among the first missionaries to visit the area of Mainas (eastern Ecuador and Perú) at the beginning of the 17th century, the *Mainas*, *Paranapura*, and *Muniche* of this region used the blowgun.

It was obviously an ancient weapon in Perú, for men shooting birds with a blowgun are represented on early Chimu vases and on a fabric discovered at Pachacamac. The Peabody Museum of Harvard recently has acquired a blowgun made of an 18-foot (about 5.4 m.) cane found near Trujillo. With it were discovered a bundle of darts from 4 to 5 inches (about 7.5 cm.) long. That it was of little importance or obsolete at the time of the Conquest may perhaps be surmised by the silence of our sources.

Early data on the occurrence of the blowgun are scarce mainly because the tribes that used it inhabited regions that were explored long after the more desirable parts of the continent had been subdued, but 17th-century conquistadors did not fail to allude to it when the tribes they visited used it. The *Jívaro*, however, constitute a remarkable exception, for although today they manufacture beautiful blowguns, the 16th-century Spaniards who fought against them never mention the weapon. A possible explanation is that the *Jívaro* acquired the blowgun sometime after the 16th century. Recently, it has been adopted by many tribes who formerly did not use it. Nordenskiöld (1924 a, p. 62) rightly observes that the efficiency of the blowgun depends on the use of curare poison, the preparation of which is the monopoly of a few tribes.

Nordenskiöld bases his hypothesis that the use of the blowgun is fairly recent in tropical America and that it spread mainly in post-Columbian times on the scarcity of references to curare in the early sources and on the distribution of the weapon. The vagueness of our early sources on tropical South America does not justify our accepting such purely negative evidence, but it is, nevertheless, striking that the blowgun is not found in eastern South America and in the Xingú region. In the Guianas the blowgun is found among the *Western Carib* (*Taulipáng*, *Arecuna*, *Acawaí*), but is lacking among the more easterly groups (*Warrau*, Baramá *Carib*, Surinam *Arawak*).[2]

The blowgun reached it highest development in South America among the tribes of the upper Amazon and in the regions between the Orinoco and the Andes. It remained unknown to the tribes of the West Indies.

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[2] For its post-Conquest spread in the Montaña, see Handbook, vol. 3, p .515.—EDITOR.

Manufacture of blowguns was formerly the specialty of some tribes that bartered them to their neighbors. In Brazilian Guiana, the *Yecuana* had the monopoly of their fabrication because the best bamboo for the purpose grew along the upper Marewari, Ventuari, and Orinoco Rivers. The *Iburuana* of the upper Ventuari imported the tucúm nuts of which they made the mouthpieces of their blowguns (Koch-Grünberg, 1923 a, 3: 338). Likewise the *Macushí* imported their blowguns from the *Arecuna*, *Maiongkong*, and *Guinau*, who live in a region where the *Arundinaria* are abundant. The *Camaracoto* obtained their blowguns at high prices from the *Marikitare;* sometimes they bought only the inner tube and then encased it themselves, for they were well provided with suitable wood for the outer tube.

Certain tribes had a monopoly on the fabrication of curare. The blowgun poison of the *Tucuna* was considered to be the most effective in the whole of Amazonia, but the knowledge of its preparation, which requires time and care, is being lost.

**Types of blowguns.**—There are four main types of blowguns:

(1) The most primitive type consists of a single bamboo tube. It is represented in South America by the *Mojo* and *Huari* blowgun, which is a simple bamboo stem, straightened by heating it over a fire and with its inner partitions abraised by fire, sand, and water. (See Métraux,, 1942 a, p. 68, and Nordenskiöld, 1924 a, p. 80.)

(2) The second type, found among the tribes of the Guianas and of the Orinoco and Uaupés Rivers and also among the *Macú* and *Passé*, consists of two tubes, one placed within the other to prevent warping. The inner tube generally is of *Arundinaria schomburgkii*, which is cut to the desired length, rotated over a fire until dry, and then exposed to the sun until it becomes yellow. The outer protective tube is made of a straight stem of the paxiuba palm (*Socrates exorrhiza*) or more rarely of a palm of the Arecineae tribe, which is dried until the central pith can easily be removed with a rod. The bore often is rubbed clean and is polished by rubbing through it a little bunch of tree fern roots. A conical mouthpiece, often carved from an *Astrocaryum* kernel, is fitted to one end of the tube, while the other end is reinforced with a wooden ring. A peccary tusk stuck in wax is mounted on the tube to serve as a sight. The weapon often is wound spirally with the shining black bark of a creeper. Its length is 10 to 13 feet (3 to 4 m.).

(3) The third type also consists of two tubes. The inner reed is encased within the two halves of young stems that have been carefully

scooped out. The whole is smeared with a layer of black wax and is wrapped with bark strips "in a somewhat overlapping spiral" (*Siusí*, *Tucano*).

(4) The fourth type, found in the upper Amazon and the *Choco* region (*Chébero*, *Jívaro*, *Chocó*, *Shipibo*, *Miraña*, *Pioje*, *Záparo*, *Quijo*, *Coto*, *Colorado*, *Ticuna*, *Tucuna*, *Yamamadí*), consisted of two sections of palmwood grooved longitudinally and fitted together to form a round bore. The manufacture of this type was observed and described by Stirling (1938, p. 83) among the *Jívaro*.

The *Conibo* blowgun was wrapped first with maize leaves, then wound with bark strips and finally coated with rosin.

The *Cuna* blowgun, which is unlike any other in South America, is composed of several tubes of slightly varying diameters joined together so as to obtain the correct length.

**Missiles.**—In Central America the most common missiles for blowguns are clay pellets, but in South America such projectiles are reported only among the *Cuna* and the *Colorado* Indians of western Ecuador (Linné, 1934, p. 192). Ribeiro de Sampaio's (1825, p. 55) statement about the use of clay pellets among the Indians of the Juruá River is not sufficiently specific to be included in a distribution map.

Everywhere else in South America, blowgun missiles are darts smeared with curare, a poison which made the blowgun into an efficient hunting weapon. The darts were thin splinters of the midrib of palm leaves (kokerit, *Astrocaryum*, inaja, bacaba, etc.). The technique used by the *Jívaro* for making these darts also has been described by Stirling (1938, p. 8).

A wadding of wild cotton that will receive the impact of the air puff is attached to the butt end of the dart. Since the wad is put on the dart when it is loaded, the Indians carry a supply of floss in a little calabash or in a basket tied to their quivers. Before shooting the dart, the hunter notches the curare-smeared point to facilitate its breaking off in the wound if the wounded animal tries to rid itself of it. Formerly, the notch was made with a piranha jawbone (*Pygocentrus*), which also was attached to the quiver.

**Blowgun quivers and protection of darts.**—Guiana quivers, which sometimes hold 150 to 200 darts, are twilled baskets made of strong strips of creepers. The bottom is made of wood or a gourd, the lid of tapir skin. The outer surface is smeared with wax or pitch; sometimes (e. g., among the tribes of the Içana and Caiarí Rivers) the quivers are partly covered with an additional layer of basketry with geometric designs. The *Jívaro*, *Chama*, *Aguano*, *Candoshi*, *Mayoruna*, *Chayawita*, and *Lamista* use bamboo quivers that sometimes are engraved in various patterns. Wooden quivers are reported among the

*Buhagana* of the upper Apáporis and Tiquié. A palm spath serves as a quiver among the *Huanyam* and the *Yecuana* (Koch-Grünberg, 1923 a, 3:341).

The darts must be stored with great care to avoid accidents. Many Guiana tribes (*Taulipáng*, *Macushí*, etc.) twine their darts together with two pairs of cotton strings—one at each end—and then wrap the bundles so obtained around a stick of the length of the quiver. A hoop is attached at the end of the stick as a protection for the hand when the quiver is reversed in order to let the bundle of darts drop out. The Içana and Caiarí River Indians place their darts point down in the quiver, where a layer of bast fibers prevents them from breaking. The *Buhagana* fold their darts in a grass mat. The *Jívaro* fill their quivers with a fibrous material which holds the darts in place.

Not all the darts in a quiver are poisoned, for the Indian smears with curare only those he intends for immediate use. The *Arecuna* sprinkle their darts with powdered stone to prevent the darts from sticking together (Koch-Grünberg, 1923 a, 3:65).

**Technique of shooting.**—Shooting with a blowgun does not entail so much skill and strength as has often been claimed. When shooting, the Indian holds the tube with both hands, palm down, close to the mouth and with the sight uppermost. He sends the dart on its way with a slight puff (Stirling, 1938, p. 83). The maximum effective range is from 30 to 45 yards.

This weapon is especially useful for shooting birds or small mammals, but the amount of poison on the darts is not sufficient to cripple permanently a large animal and even less a man.

### SLINGS

**Distribution.**—The sling (map 4) can be used to good advantage only in open country. It was the favorite weapon of mountain Indians from Colombia to Chile (Cauca River, *Quimbaya*, *Ica*, *Panche*); it was also used by the *Ona* and *Yahgan* of Tierra del Fuego and by the *Tehuelche*. In the forested areas of South America it occurs as a boy's toy, e. g., in the Chaco. It is found in eastern Bolivia among the *Mojo*, *Canichana*, *Itonama*, and *Bauré*, who live partly in open savannas. Lacking stones, the *Mojo* are said to have cast with them clay pellets bristling with curare-poisoned thorns. The sling also is found among the *Chiriguano*, who have borrowed it from their *Quechua* neighbors.

**Types of slings.**—The Andean sling generally was made of wool or cotton; the broad central cradle which held the stone was woven in a tight fabric, often decorated with varicolored geometric designs. The slit in the middle of the cradle gave a certain elasticity to the textile so that stones of different sizes could be thrown. On some slings the cradle was a separate piece to which strings were tied. One of the strings ended in a loop which was slipped over a finger. Both strings were held in the same hand, the sling was whirled around the right shoulder, and the missile was thrown by releasing the loopless string.

The cradle of the *Ona* and *Yahgan* sling was a piece of Guanaco or seal skin. On *Ona* specimens it was suspended on braided whalegut lines, while on *Yahgan* slings it was attached to strips of guanaco hide. The method of discharge also differed in the two Fuegian tribes. The *Ona* wrapped the "long end around the fore finger, while the *Yahgan* inserted it between the fourth and little fingers so that it extended across the palm of the hand" (Lothrop, 1928, pp. 83–84).

The Chaco sling is a flimsy implement made in a few minutes by looping a cord in the middle to form a rudimentary cradle or central net. The only missiles are fragments of hardened clay.

### BOLAS

**Distribution.**—The distribution of bolas (Spanish: boleadoras) coincides, in part with that of the sling, a coincidence that is not entirely fortuitous, since both weapons are effective only in open country.

The occurrence of the bolas among the *Ona* of Tierra del Fuego is doubtful. Spherical stones that may have been for bolas have been found in the open country of the Isla Grande, but their actual use is not reported by our authorities on these Indians. Bolas were a favorite weapon among the *Tehuelche*, *Puelche*, *Querandí*, *Charrua*, and probably all tribes of the Pampa. They were known to both Chilean and Argentinian *Araucanians*. In ancient Perú, bolas were used mainly by the *Aymara*, but also by the *Quechua*. Bolas have been found in the chullpas of Bolivia, but they do not appear in archeological collections made on the coast and are not reproduced on the Chimu ceramics, an indication that they were not adopted by the coastal cultures. Bolas also are mentioned by the conquistadors who, at the beginning of the 16th century, entered the plains of Mojos. In the 18th century, both the *Mocoví* and the *Abipón* used them. In modern times, the *Lengua* still employed them to catch rheas. Koenigswald (1908) assigns the use of the bolas to the *Shokleng* (*Aweikoma*) of Santa Catharina, but the statement needs confirmation. Stone for bolas were found archeologically in Uruguay and in southern Brazil, a distribution which coincides with historical data.

**Types.**—Typologically, bolas may consist of one, two, or three stone balls. The one-stone bolas, or "bola perdida," is described by the 16th-century Spaniards who saw it in the hands of the *Querandí* when they attacked the horsemen of the Adelantado Mendoza. The bola perdida was still used 100 years ago by the *Tehuelche*, who sometimes handled it as a mace to smash the skull of pumas. A text by Sarmiento referring to a *Quechua* weapon may be interpreted as a reference to the bola perdida. The *Uro* on the southern shore of Lake Titicaca still hunt ducks with a straw bola perdida.

Two-stone bolas are reported in Patagonia, and among the *Aymara* and the *Shokleng* (*Aweikoma*) of Santa Catharina.

The most common type of bolas consists of three stones; the one held in the hand is smaller and more elongated than the others. This is the bolas used by the *Aymara*, the *Mojo*, and the Chaco Indians, and today by the gauchos of Argentina and Uruguay.

The weights of the Patagonian bolas were often beautifully polished spherical stones with a deep groove around the middle for fastening the cord. The stones of *Aymara* bolas (llivi) were smaller but also grooved; modern *Aymara* bolas are folded in raw leather, as were the stones of the *Mocoví* and *Abipón* bolas.

The bolas was principally a hunting weapon, but it became a war weapon that was used with some success against the Spaniards when the Indians observed how effectively it stopped their horses. (See Friederici, 1915, p. 34, and Nordenskiöld, 1929 b, p. 52.)

## CLUBS

South American clubs fall into four main categories: (1) staff clubs or cudgels; (2) flat clubs or wooden swords, called in Spanish literature "macanas"; (3) maces or clubs with a stone or metal head; and (4) throwing clubs.

**Staff clubs or cudgels.**—The crudest forms of this weapon are the ordinary sticks used by several tribes for hunting or warfare (*Botocudo*, *Yahgan*, *Alacaluf*, *Guayakí*). The Indians of the Apáporis region used knotty branches to break their enemies' legs. Nimuendajú saw the *Parintintin* use simple sticks as cudgels.

Cudgels usually are carefully carved and given a conical shape (*Carajá*, *Shavaje*, *Cayapó*, *Caingang*, *Shipaya*). The clubs of the southern *Caingang* have a prismatic cross section and sharp edges. Clubs with a square cross section occur only among the *Cainguá*. The clubs of the Chaco tribes were heavy cudgels of palomataco wood with a bulging conical head or a wooden disk carved at the distal end of a cylindrical shaft. The latter type is reminiscent of the *Inca* maces. The *Shipaya* used short, cylindrical clubs with a suspension loop.

**Flat clubs, or macanas.**—"Macana," a *Taino* word, was applied by the Spanish conquistadors to all flat wooden swords or clubs used by the South American Indians. The original macana of the *Taino* was about 5 feet to 5 feet 4 inches (1.50 to 1.60 m.) long and 2 inches (5 cm.) wide. It was flat with two sharp edges and tapered from the handle to the straight distal end. The Indians handled it with both hands.

On the mainland the wooden sword is reported among the Indians of Darién, Urabá, the Cauca Valley, the region of Piritú (*Cumanagoto* and other tribes), among the *Piapoco*, *Guahibo*, *Pioje*, and *Achagua*, and, south of the Amazon, among the *Cayabi*, *Huari* and the *Nambicuara* (as a ceremonial weapon). It was also the weapon of the Panoan tribes of the Ucayali.

The wooden sword was also used by the *Inca* armies. Here it was made of hard chonta wood, was about 4 feet (1.2 m.) long, 4 inches (10 cm.) wide, and tapered toward the handgrip. The rounded hilt ended in a knob or pommel.

The Guiana macana had the appearance of a sharp-edged paddle. The short, flat clubs of the *Macushí*, *Acawoi*, *Carib*, and *Umaua*, which had the handle near the middle and a pointed shaft, served as a knife, a club, and a bayonet (Roth, W. E., 1924, p. 173, and Koch-Grünberg, 1923 a, 3:302).

Typologically the famous *Tupinamba* tacape, or sword, with its round or oval flat head at the end of a long flattened shaft, is related to the Guiana paddle club, though it must be regarded as a highly aberrant form. The spatulate club of the *Chiriguano* and *Guarayú* belongs to the same general type.

Besides their conical cudgels, the *Cayapó* had two types of flat clubs: the first with a round grip and a flat rounded end; the other flat from the tapering grip to the sharp flat blade. The latter type is covered with a basketry sheath (Krause, 1911, p. 392).

The *Suya*, *Trumaí*, and *Asuriní* of the Xingú River and the *Chacobo* of eastern Bolivia have small clubs with a flattened oval head and a short shaft. These clubs often are used as dance accessories (*Trumaí*, *Camayurá*, *Chacobo*).

**Maces.**—The favorite *Inca* club was a mace consisting of a starlike head of stone, bronze, silver, or even gold with a central perforation into which a handle (generally about 3 feet long) was inserted.[3]

Many maces with stone or copper heads have been found on the Peruvian Coast. A Nazca specimen is described as follows: The shaft of hardwood, 74 cm. long, passes through the central hole of the copper head and is fastened by a piece of leather connecting the head to the shaft. Similar clubs have been found at Pachacamac, Marquez, Chiuitanta, and Trujillo (Antze, 1936).

Stone or copper maces found in the *Diaguita* territory belong to two types: one consists of simple rings; the other has a star-shaped head (Márquez Miranda, 1942–43, p. 42).

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[3] Casas, B. de las, 1939: "Las porras eran a manera de esarella, y pasaba el palo por medio con un astil cuasi de cuatro palmas, y traianlas ceñidas al cuerpo del brazo."

In the 17th century, some tribes of the upper Paraguay River used maces with stone heads (itaiza). These Indians were probably *Guaraní*, not *Caingang*. Countless stone rings, probably mace heads, have been found on archeological sites in the State of Rio Grande do Sul.

**Throwing clubs.**—The short, bulky clubs of the Chaco Indians could be hurled effectively both at men and at game. *Mbayá* and *Mocoví* hunters cast clubs at deer and rheas, which they pursued on horseback. Smaller clubs with a bulging head and a short handle are used by the *Chamacoco* and other Chaco tribes to knock down camp rats. Throwing clubs with bulging heads are also reported among the *Guayakí*.

There is no convincing evidence that the *Tehuelche* were armed with throwing clubs attached to a recovery cord.

**Aberrant types of clubs.**—An *Araucanian* club deserves special mention for its peculiar shape and specialized function. The end of the weapon expanded on one side into a sharp blade and on the other into a hook. An enemy who had been knocked down with the blade was dragged off the field of battle with the hook.

The national weapon of the *Sherente* is the "kwiro," a staff club 48 inches (1.20 m.) long with a thickened butt somewhat curved in saber fashion which has an edge on both the convex and concave side (Nimuendajú, 1942, p. 76).

**Decoration of clubs.**—Clubs often were decorated with black and white basketry sheaths (Guiana, *Cayapó*, *Cayabí*, *Cainguá*, etc.). Guiana clubs were engraved with designs filled in with diverse colors. *Cayapó*, *Apinayé*, *Carajá*, *Shavaje*, and *Camayura* clubs had longitudinal flutings that probably originated in the marks left by the scraping instruments. *Tupinamba* clubs were embellished by a cotton fringe and feathered tassels that were renewed before the execution of war prisoners. The handles of the clubs often were covered with cotton, wound tightly to give a better grip to the hand. Short clubs were provided with a loop for the wrist.

### THE BATTLE AX

The battle ax, or halberd, existed only in ancient Perú. The stone or metal head of the battle axes was the common Andean or T-shaped type with two ears that were lashed against the shaft. The halberd was either a combination of the star-shaped mace and the ax or a blade with several sharp hooks similar to the heads of European halberds.

### DAGGERS

Daggers seldom are mentioned in the literature. For hand to hand fighting, the *Sherente* carried a dagger 12 inches (30 cm.) long made either of bamboo or of the femur of a steppe deer with a feather-ornamented wooden handle. The weapon was suspended on the back by a neck cord (Nimuendajú, 1942, p. 76).

The daggers of the *Panoan* tribes of the Juruá River are short bamboo blades with a hilt covered with squirrel skin; they were worn on the back held by a tumpline.

*Parintintin* daggers were made of bamboo; the internodium served as a handle. They were used both as weapons and cutting tools.

### LANCES, JAVELINS, AND HARPOONS

Cieza de León (1932, pp. 55, 70), in listing the weapons of the *Quimbaya* and those of the Indians of the Cauca Valley, distinguishes carefully between the "dardos" and "lanzas," i. e., between javelins and lances. Few of our ancient sources make this distinction so that it is difficult to establish the respective distribution of these two weapons.

**Lances and spears.**—The distribution of the lance certainly is greater than would be apparent from a listing of the tribes mentioned in the available literature. Moreover, the iron spear heads traded to the Indians by the Spaniards contributed to the increased popularity of this weapon among many tribes that perhaps had not previously used it or that had considered it of secondary importance.

The lance was one of the chief weapons of *Chibcha* and *Inca* warriors; it is still the chosen weapon of the *Jívaro*. The use of the thrusting spear or lance is reported among a great many tribes of the upper Amazon and its tributaries, including the *Yameo*, *Coto*, *Mayoruna*, *Cashibo*, *Chayavita*, *Iquito*, *Chamicuro*, and *Jívaro*. It is also found among the tribes of the Tapajóz River (*Apiacá* and *Mundurucú*), the Araguaya River (*Carajá*, *Shavaje*), the coast of Brazil (*Purí-Coroado*), southern Brazil (*Caingang*), and the Chaco, and among the *Guató*.

The thrusting power of a lance carried by a man on horseback made it the favorate weapon of the equestrian tribes (*Abipón*, *Mocoví*, *Mbayá*, *Araucanians*, *Charrua*, *Tehuelche*).

The chief weapon of the *Yahgan*, *Alacaluf*, and *Chono* was the spear. The *Yahgan* spear varied in type according to the purpose for which it was intended; fish and bird spears consisted of "a beechwood shaft tipped with a serrated whalebone head lashed in place with seal-hide or braided sinew" (Lothrop, 1928, p. 150). Sometimes an additional point was lashed against the shaft. Guanaco spears were equipped with a large, single barbed bone point. *Ona* fishing and hunting spears had a unilaterally barbed bone shank. Throwing spears with a wooden serrated point, identical to those of the *Yahgan*, were used by the ancient *Mocoví* to kill capivara and caimans.

Lances were often a simple pole with a sharpened and fire-hardened end (*Tucuna*, *Charrua*, Indians of Darién, and, in certain cases, the *Inca*).

In some tribes the shaft and head were carved out of one piece of wood. *Jívaro* spears, for instance, have a head "either diamond shaped with a low ridge running down the center of each side and tapering to a cutting edge, or triangular in section without the cutting edge" (Stirling, 1938, p. 86). Similarly, the *Yamamadí* spears, which were used both as lances and javelins, ended in a tip with four to six edges.

Lances were frequently tipped with heads, which may be classified as follows: (1) A sharp wooden or bamboo blade (*Apiacá*, *Mayoruna*, *Arara*, *Omurana*, *Tucuna*, *Piojé*, *Andoa*): (2) the sharpened portion of a tubular bone of a large animal—generally a jaguar—or occasionally of a man (*Shavaje*, *Carajá*, *Sherente*, *Ssabela*, *Encabellado*, *Guató*); (3) a socketed deer horn (*Mocoví*, *Abipón*, *Mataco*, *Toba*); (4) a stone point (*Araucanians*) or a copper or bronze head (ancient Perú). In the Colonial Period iron heads became very common among Chaco and Pampa Indians. The longest lances were those of the equestrian *Araucanians*, *Charrua*, and *Guaycuruan* tribes of the Chaco, averaging in these tribes from 12 to 18 feet (3.6 to 5.5 m.). Lances handled by footmen were generally from 6 to 7 feet (1.8 to 2 m.) long (*Páez*, *Latacunga*, *Apiacá*, *Carajá*, *Sherente*).

Lances were often trimmed with feather tufts (*Carajá*, *Sherente*, *Apiacá*, *Maina*, *Záparo*, *Mocoví*) or were decorated with a black and white basketry cover with geometrical patterns (*Carajá*, *Shavaje*).

**Javelins.**—The use of the javelin in preference to the bow and arrow characterizes a great many tribes on the tributaries of the upper Amazon River (*Mayoruna*, *Candoshi*, *Záparo*, *Gaye*, *Chébero*, *Maina*, *Ssabela*, *Menimehe*, *Muinane*, *Tšoloa*, *Coto*, *Bora*, *Witoto*, *Yameo*). Warriors and hunters generally carried several javelins which they hurled in rapid succession.

The javelins of the *Yameo*, *Iquito*, *Gaye*, *Pioje*, *Menimehe*, *Muinave*, *Ocaina*, *Yagua*, *Tucuna*, *Bora*, *Witoto*, *Juri*, *Uainumá*, and *Passé* were tipped with a poisoned palm spine. Simson describes this type:

> Here, these weapons are scraped to taper gradually almost to a point at the hilt; and the head end of the spear, which by degrees thickens, has another thin, sharp dart of chonta, about 3 inches long, inserted into and bound to it. This dart is besmeared with poison; and when the lance is thrown at any animal it breaks off in the flesh, to facilitate which it is usually cut half through at the base.[4] [Simson, 1886, p. 195.]

The javelin was one of the weapons used by the *Querandí* and *Charrua* in their fights against the Spaniards. Their darts are described as half-spikes with stone heads. Darts (javelins) are also attributed to the *Tehuelche* though the reference is obscure. We know that they sometimes hurled their lances at their foes.

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[4] Figueroa, 1904, p. 155: "[los Gayes] arrojan las [lanzas] que llevan, que son fornidas de una pieza de chonta ambas puntas trianguladas y bien agudas, apuntando a los bultos que en medio de la obscuridad divisan."

**Harpoons.**—Harpoons thrown by hand were rare in South America before the Europeans contributed to their diffusion. Harpoon arrows, however, probably had a wide distribution throughout the tropical area. (See above.)

To catch seals, porpoises, and whales, the *Yahgan* and *Alacaluf* employed "a harpoon with a heavy shaft and detachable head joined to the shaft by a thong." In eastern Tierra del Fuego, the head was single-barbed; in the western part of the island, double-barbed. The tang of the spearhead was inserted in a slot "which ran completely through the head of the shaft, where it was loosely lashed by an encircling sealhide thong. It was held in place by a second thong tied to the tang and attached to the shaft 2 or 3 feet from the head" (Lothrop, 1928, p. 153).

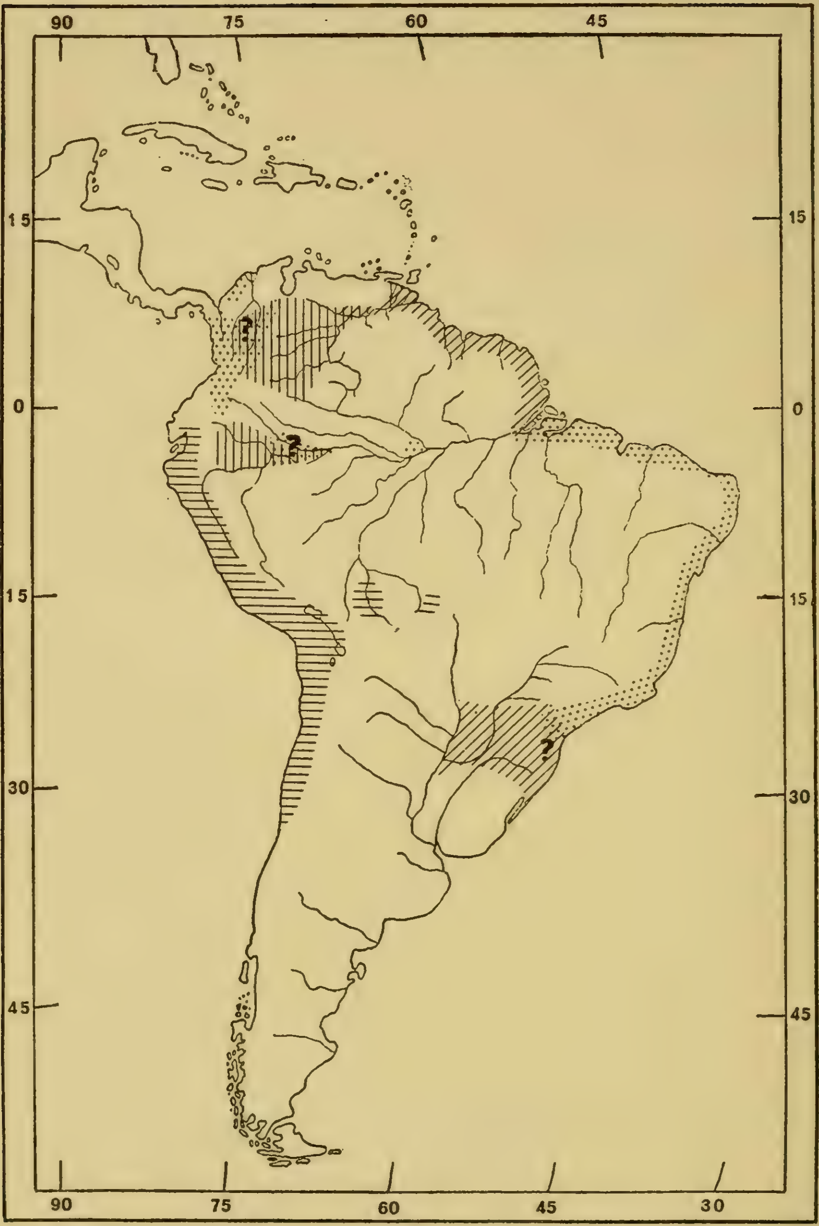
The *Mocoví* hurled a harpoonlike javelin at their enemies. The head was made of a tip of deer horn loosely socketed into a rod of hardwood fastened to a haft of softwood. A cord connected the point to the haft, which fell to the ground when the weapon found its mark and thus hampered the flight of the wounded men or animal.

## SHIELDS

References to shields are abundant in the ancient literature but details about their composition and form generally are lacking. The distribution of this defensive weapon (map 5) has been outlined by Nordenskiöld (1924 a, map 7), who stresses its frequent occurrence north of the Amazon, in the Guianas, along the Colombian Andes, on the tributaries of the upper Amazon, and in the Andean region from Perú to Chile. South of the Amazon the shield becomes rare and is reported only among the *Tupinamba*, the *Guaraní*, and, in eastern Bolivia, among the *Mojo* and the *Bauré*. Shields are made of several different materials, including hide, wood, and basketry.

**Skin shields.**—Among many tropical tribes, shields were made of one piece of tapir or manatee hide (Indians of the Orinoco and of the upper Amazon, *Juri*, *Uainumá*, *Passé*, *Tucuna*, and *Tupinamba*). The shields of the *Yahuna* and of the nearby *Arawakan* tribes were formed by five layers of tapir skin which rendered them almost bullet proof (Koch-Grünberg, 1923 b, p. 383). Shields made of several hides sewn together were found among the *Tehuelche* of Patagonia and the *Araucanians*.

**Wooden shields.**—Soft light woods, such as the palo balsa, often were used for making shields by the Guiana *Carib*, the *Galibí*, *Palicur*, *Iquito*, *Jívaro*, *Záparo*, and *Tupinamba*. The wooden shields of the *Jívaro*, and probably also those of the *Záparo*, were made from the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Map 5.—Distribution of shields: Rod (*horizontal hachure*); basketry (*vertical hachure*); light wood (*diagonal hachure*); tapir hide (*stipple*).

large flat buttresses of the ceiba tree (*Bombax ceiba*), a wood which does not split and which, moreover, is tough and light. The *Jívaro* shield is composed of three superimposed disks, each about a half inch in thickness and each with a diameter approximately one-half that of the disk upon which it was superimposed (Stirling, 1938, p. 87). *Warrau* shields were made of parallel strips of the pith of the aeta palm held together by means of three long transverse sticks.

**Basketry shields.**—Basketry shields were common among the tribes of the Caiarí-Uaupés, the upper Amazon, and among the *Achagua.* Those of the *Omagua* are made of carefully interlaced reeds (caña brava) reinforced by a frame (Chantre y Herrera, 1901, p. 88). The *Tucano* and *Desana* shields, formerly used at war, but today mere dance accessories, are woven on a spiral foundation like baskets. Some *Iquito* and *Yameo* shields were made of a tight fabric woven of chambira strings (Maroni, 1889–92, 31: 50).

The handle is rarely described. The *Jívaro* shield had a hand grip of rattan attached to the apex of the central concavity and fastened in place by pegs (Stirling, 1938, p. 87). *Záparo* shields had a grip of thick cotton threads.

**Shapes of shields.**—In Perú and in the Amazon Basin shields were either round (*Tucano*, *Záparo*, *Jívaro*, *Tucuna*, *Tupinamba*) or rectangular (*Galibí*, *Carib*, *Juri*, *Iquito*).

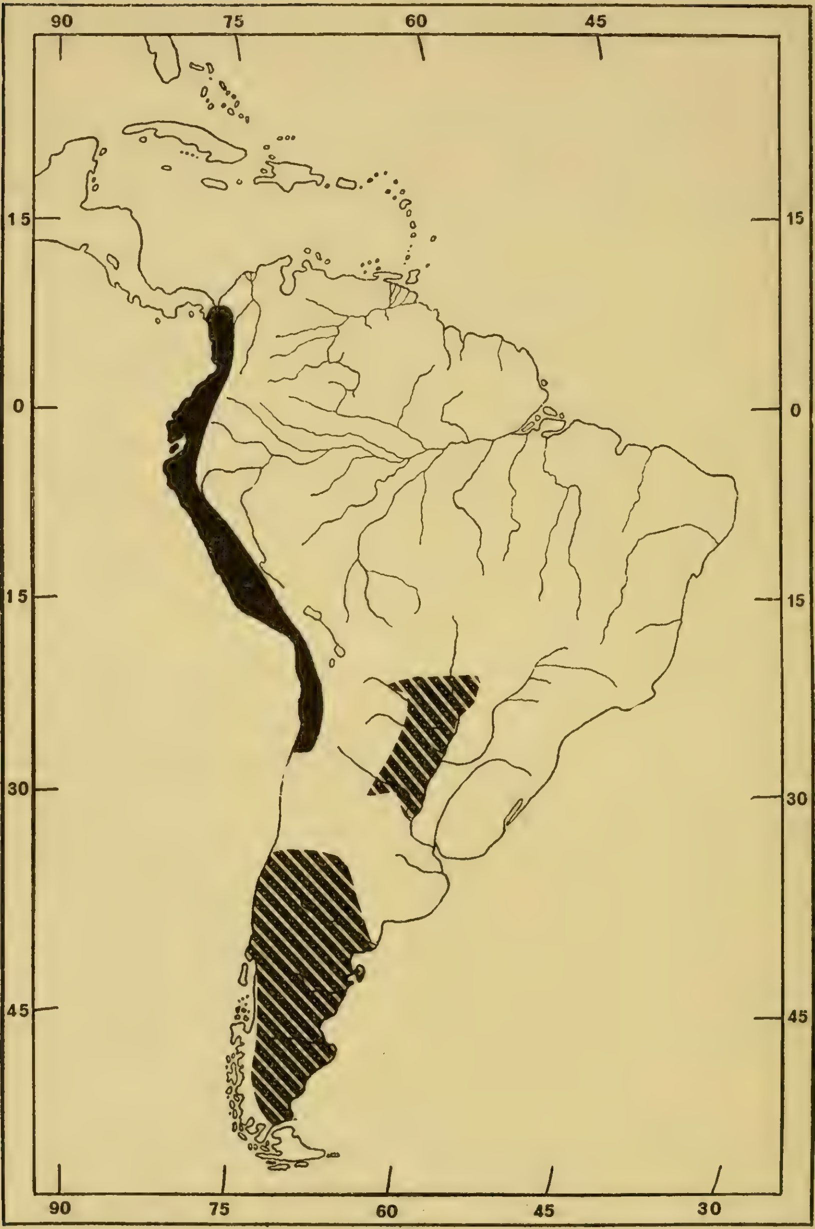
**Size of shields.**—The size of the shields varied considerably. In the region of Maynas and in the valley of Patía in Colombia, they covered the warrior from shoulders to feet. *Iquito* shields were narrow but so long that they protected the warrior up to the shoulders (Maroni, 1889–92, 31: 75).

**Decorations.**—Peruvian shields were often covered with decorative cloth or feather fabrics bearing the soldier's devices in color. The *Jívaro* represented on their shields animals and spirits that bestowed power in warfare; *Galibí* shields were daubed with various colors (Barrère, 1743, p. 168). Sometimes shields were covered with feather mosaics or were trimmed with feather tassels (e. g., those of the *Aracajú;* Bettendorf, 1910, p. 32), but it is probable that these luxurious shields were mere dance accessories.

### ARMOR

*Inca* warriors protected their bodies with tunics (map 6) padded with cotton, similar to those used by the Aztec and adopted by the Spaniards in their war against the Indians. A fragment of such a tunic has been described by Montell, as follows:

> Between two layers of brown cloth there is a padding of cotton wool which appears to have been about 2 inches thick. The whole is held together with stitches of coarse thread which on one side forms knots at intervals of 4 cm. [Montell, 1929, p. 110.]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Map 6.—Distribution of protective garments for warfare: Padded tunic (*solid black*); skin armor (*diagonal hachure*).

The Chaco Indians, particularly those who adopted the horse, wore leather—generally jaguar skin—jackets that sometimes reached the knees. These served the double purpose of a protective and an ornamental garment. The ones made of jaguar skin communicated to their wearers the fierceness of the animal. The *Ocaina* were said to have tapir-hide armor.

The conquistadors of Chile mention that the *Araucanians* had hide armor, sometimes made of seal skin. In post-Colombian times long cowhide jackets were part of the regular outfit of *Araucanian* and *Tehuelche* warriors. In González de Nájera (1889, p. 33), there is a reference to "whale bone armor," but unfortunately he gives no details.

The term "armor" also may be extended to the thick shirts of the *Mataco*, *Chorotí*, and *Toba* Indians, which were made of a fabric of caraguatá fibers and were donned for battle as they were not easily pierced by arrows.

Some of the huge complicated headdresses of the Chimu warriors were perhaps helmets that, besides being extremely ornamental, protected the wearers from the impact of clubs and sling stones. A helmet described by Montell (1929, p. 58) consisted of a wooden frame covered with a layer of sticks wound with cotton. Both sides of such helmets have disks that covered the ears and generally have been interpreted as earplugs. Cobo lists among *Inca* defensive weapons helmets made of reed, wood, and cotton wool. The *Mapuche* had helmets made of sealskin.

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# TRAPS

By John M. Cooper

Our information on South American traps is satisfactory for only a few tribes and regions. We have very meager data on traps used by the Southern Hunters south of the Chaco and by the peoples of the Andean Highlands and West Coast from Panamá to Chiloé. The Southern Hunters, it seems fairly clear, have few and very simple traps. Whether our paucity of information on the trapping complex of the Andean and West Coast peoples is due to poverty of the complex or to lacunae in our recorded observations is not clear; the first alternative seems the more probable. At any rate most of our information on South American traps is from the Silval region, the forests and savannas of the Guianas and of the Orinoco, Amazon, and Paraná-Paraguay watersheds. Even for this great area our records are spotty, and, with rare exceptions, lacking in detail.

Our most important sources on South American traps are: W. E. Roth (1911, 1924, 1929) for British Guiana; Nordenskiöld (1920, especially 1924 a) for eastern Bolivia; Tessmann (1928, *Tschama;* especially 1930) for northeastern Perú and adjacent territory of eastern Ecuador and southeastern Colombia; Fejos (1943) for the *Yagua* of northeastern Perú; Koch-Grünberg (1908 a, 1908 b, 1909–10) for the Caiarí-Uaupés River region. Of the many other scattered sources, the more useful are: Ambrosetti (1895, *Cainguá* of the upper Paraná), Barrett (1925, *Cayapa* of Ecuador), Bolinder (1925, *Ica* of Colombia), De Brettes (1903, *Arhuaco-Cagabá* of Colombia), Crévaux (1883, Parou River), Ehrenreich (1891, *Ipurina* and *Yamamadí* of the Purús), Estevão de Oliveira (1930, *Apinayé* of the upper Tocantins), Farabee (1918, 1924, *Arawak* and *Carib* of British Guiana and northern Brazil), Grubb (1913, *Lengua* of the Chaco), Johnson (Handbook, vol. 4, p. 231, *Guaymí*), Karsten (1935, *Jívaro*), Koch-Grünberg (1917–28, *Taulipáng*), Krause (1911, *Carajá*), Lovén (1935, *Taino*), Martius (1867, *Tupí* of the Amazon), Métraux (1928 a, *Tupí-Guaraní*), Nimuendajú (1926, *Palicur*, *Uacá*), Stedman (1806, Negroes of Surinam), Steere (1903, *Ipurina* of the Purús), Taylor (1938, *Carib* of Dominica), Vogt (1904, *Cainguá*), Wavrin (1926, *Cainguá*).

For comparison of South American traps with those from other parts of the world, see especially: Lips (1927, world), Lindblom (1925–26, Africa), Keller (1936, Africa), Cooper (1938, northern North America), Sirelius (1934, Finland).

## BIRD AND MAMMAL TRAPS

**Snares.**—The pole snare, consisting of a noose at the end of a pole, for catching birds occurs very widespread from Panamá and the West Indies to Cape Horn—as it does in North America and the Old World. Perch and clog snares are not reported, but various types of single and multiple tether snares for birds and mammals are recorded from many parts of the continent, especially in the Marginal and Silval regions.

Of lifting-pole snares, the tossing-pole type, in which the pole works by gravity, as a lever, is not reported, but several kinds of the spring-pole type, in which the pole works from the "spring" of the pole itself, are recorded from the Silval region (map 7). The type illustrated in figure 68, a type of wide distribution in western North America (e. g., *Yuma*, Thompson River, *Kwakiutl*) and the Old World (e. g., *Pahouin* of French Congo, *Dyaks* and *Malays* of Sarawak, *Thadou Kuki* of Assam), is recorded for the *Carib* of Dominica, *Arawak* and other tribes of Guiana, *Chorotí* of the Chaco, *Cainguá*, and *Lamisto* and *Amahuaka* of northeastern Perú; with tread-bar or leaf-covered release instead of tread-grill, for the *Chané* and *Cavina* of Bolivia and the *Toba* of the Chaco, the whole Caiarí-Uaupés area, the *Pioché*, *Ocáina*, *Coto*, and *Quijo* of the upper Putumayo and Napo, and the *Arhuaco-Cagabá*. Five other types of spring-pole snares are found among: (1) The *Pauserna* of Bolivia (Nordenskiöld, 1924 a, p. 67); (2) the *Cavina* (Nordenskiöld, 1924 a, p. 70); variants:

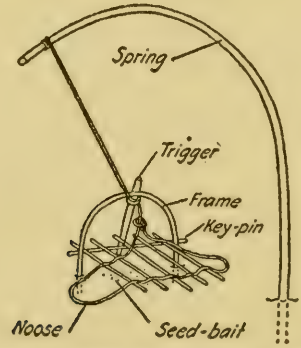
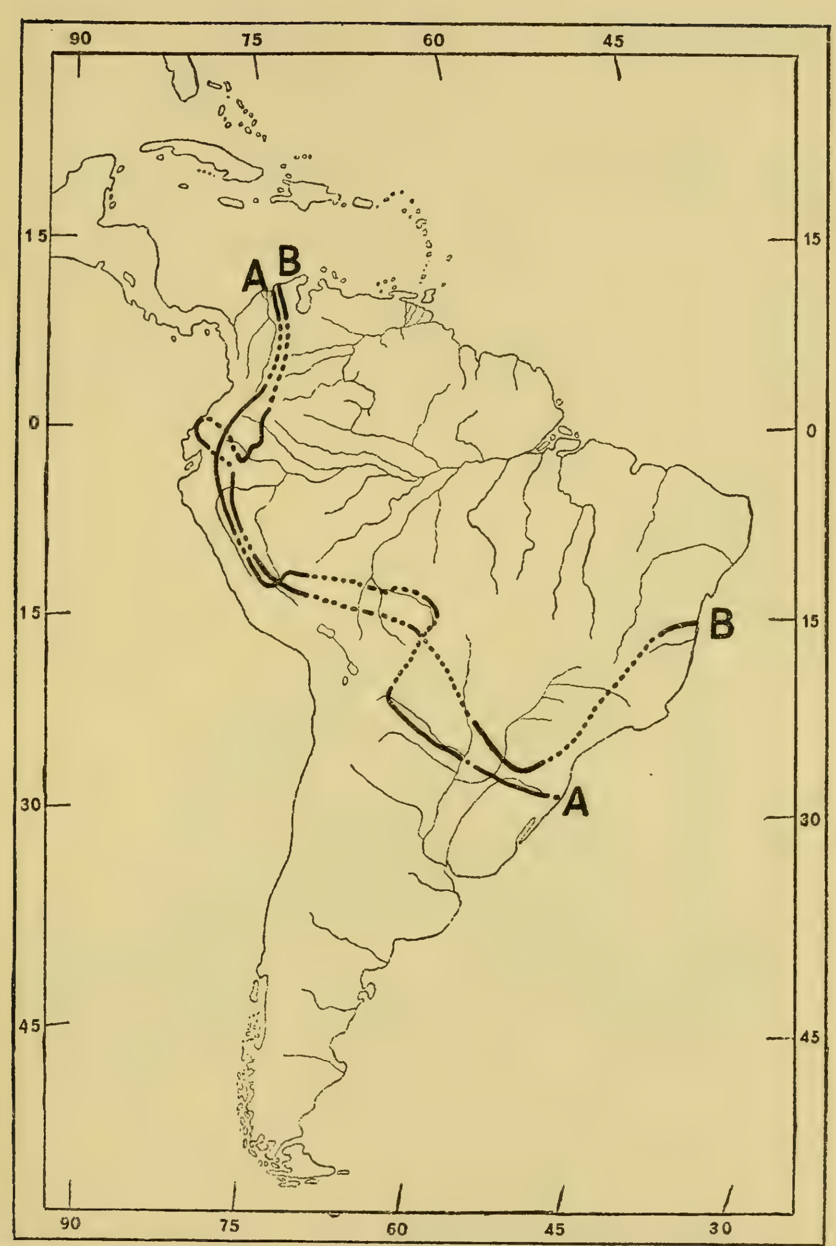


FIGURE 68.—Spring-pole snare. *Carib* of Dominica, West Indies. (After Taylor, 1938, fig. 36.)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MAP 7.—Distribution of traps: *A—A*, Western and southern limit of spring-pole snares; *B—B*, western and southern limit of deadfalls. Dotted sections of lines represent lacunae in our sources.

*Machushí* and *Patamona* (Roth, W. E., 1924, p. 187); (3) *Chayawita* of northeastern Perú (Tessmann, 1930, p. 380); (4) *Yagua* (Fejos, 1943, pp. 52–53); (5) *Kandoschi* (Tessmann, 1930, p. 340).

Two types of spring-pole snare with choke lift are reported among the *Cavina* (Nordenskiöld, 1924 a, pp. 70–72; cf. W. E. Roth, 1924, pl. 41, fig. 1) and the *Toba* (Nordenskiöld, 1924 a, p. 73), respectively. Spring pole snares, reported without sufficient detail for identification are also found among the *Jívaro*, the *Caingang*, and on the Parou River. The catch-loop of northeastern North America (Cooper, 1938, p. 7) is not recorded, nor is the toggle snare, or trip-string release with spring-pole snares.

**Deadfalls.**—Deadfalls are reported only for the Silval area of South America; they are lacking south of the Chaco, and seemingly in the Andean Highlands and West Coast area, except in northern Colombia.

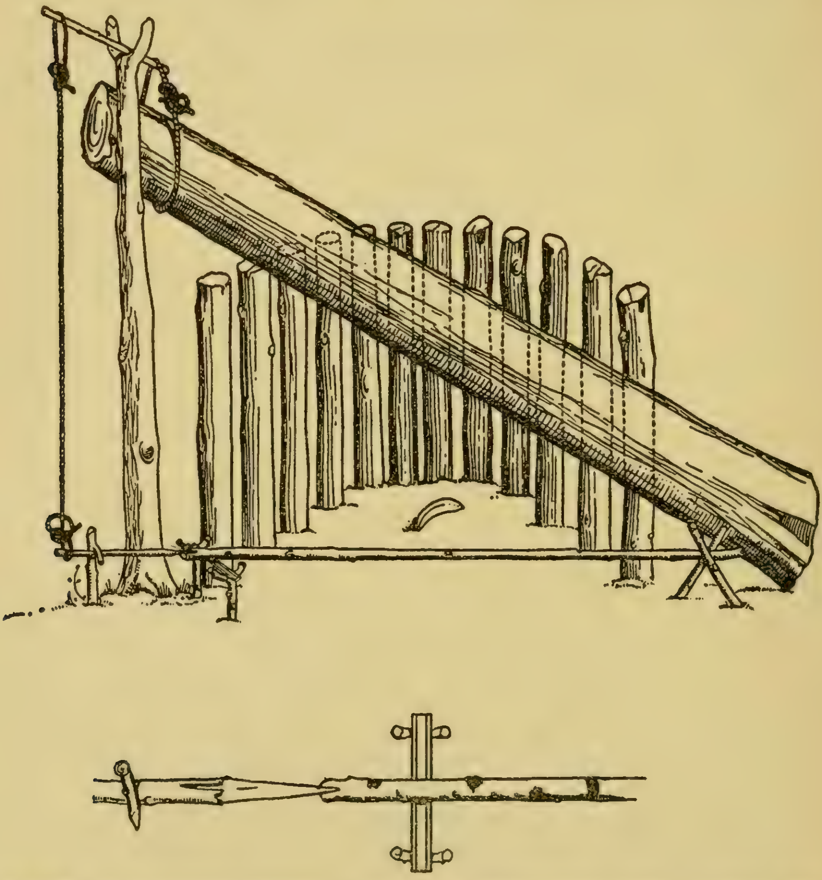

FIGURE 69.—Overhung deadfall. *Yagua* of northeastern Perú. (After Fejos, 1943, fig. 18.)

Both overhung types, in which the fall log is hung or suspended by a loop from above, and underpropped ones, in which the fall log is propped up by a post or other support from underneath, are found, the former being the more common. The trigger, i. e., the whole mechanism—apart from fall log, bed log, weight logs, guide stakes, and pen—which holds set and releases the fall log, is more commonly identical with or a variant of that illustrated supra (fig. 68) for the most widespread type of spring-pole snare; but several other trigger types are also found. The trip-spring release is not reported for South American deadfalls.

One type of overhung deadfall, that of the *Yagua*, is illustrated in figure 69. Four other types of overhung deadfalls are recorded and figured in our sources: (1) *Cayapa*, *Tumapasa*, and *Cainguá*, with trigger as in the *Carib* of Dominica spring-pole snare (fig. 68); (2) *Iquito-Kahuarano;* (3) *Schayawita*, *Lamisto*, *Chébero;* (4) *Ica* and Demarara River Indians—the latter believed by Roth to be borrowed from the Negroes.

A *Pioché* underpropped lever-and-stake deadfall is illustrated in figure 70. Four other types of underpropped deadfalls are found among the: (1) *Guarayú;* (2) *Ocaina*, *Awishira*, with trigger as in the *Pioché* type; (3) *Mosetene;* (4) *Ica.* The samson-post deadfall of northern North America and northern Asia is not reported for South America.

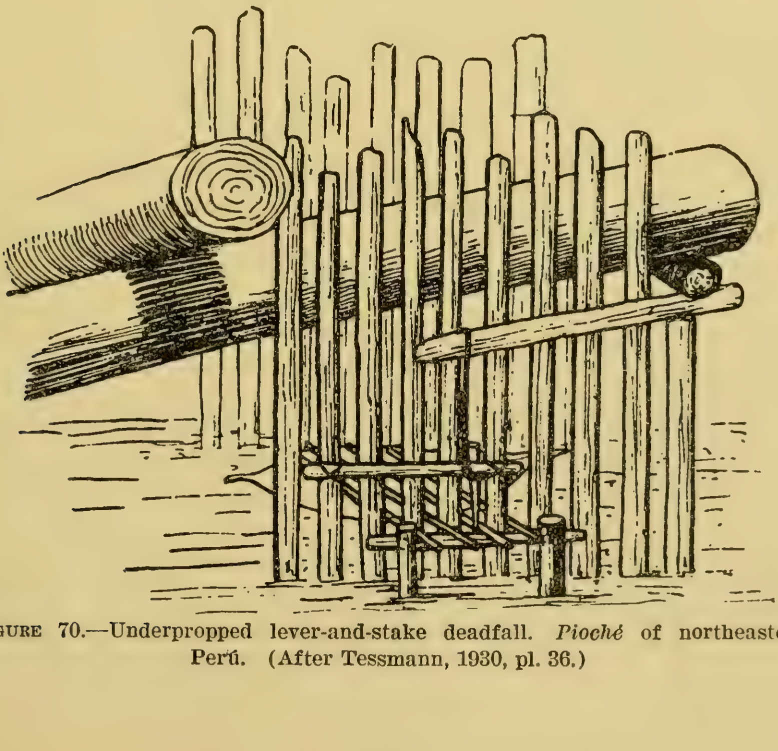

FIGURE 70.—Underpropped lever-and-stake deadfall. *Pioché* of northeastern Perú. (After Tessmann, 1930, pl. 36.)

De Brettes (1903, pp. 340–341) gives a cut of an *Arhuaco-Cagabá* deadfall for armadillos, which consists of a heavy flat stone supported by a figure-4 trigger—the only instance known to the present writer of Indian use of the figure-4 trigger in South America (European influence?).

The *Mosetene* two-lever deadfall occurs also, with a heavy fall log instead of a stone-weighted fall platform, among the *Guarayú*, *Ssimaku* (cf. *Omurana*), and upper Barima River Indians.

Deadfalls are also recorded, without however sufficient details for reconstruction and identification, among the *Tupinamba*, *Guaraní*, and many tribes of the northeastern Perú region.

The *Ocaina* (also *Witoto* and *Muinane*) monkey trap (Tessmann, 1930, p. 306), set on the branch of a tree, differs from the ordinary deadfall in that the fall or crushing stick, on release, is pulled down on the trapped animal by a heavy weight hanging from the stick.

**Fall traps.**—The basketlike fall trap of the *Carib* of Dominica, with rabbet-joint supporting post (fig. 71), is identical with a northeastern Perú (*Chama*) and a Guiana trap. Roth considered the last to be perhaps of foreign introduction, but its occurrence on Dominica and in northeastern Perú as well suggests its aboriginality, and the present writer has found a very similar trap, with the identical rabbet-joint supporting post, among the *Yuma* and *Papago* of Arizona. The *Cainguá* and *Palicur* fall traps, described but not figured by Wavrin and Nimuendajú respectively, are of similar or perhaps identical construction. The *Carajá* fall trap figured by Krause has a similar fall basket but a quite different trigger. In Farabee's *Wapisiana* trap (1918, p. 53) with basketlike fall and in his *Macushí* "beehive trap" (1924, pp. 44–45) the support is released by a boy on watch who pulls the string when the birds come under the basket to eat the seed bait.

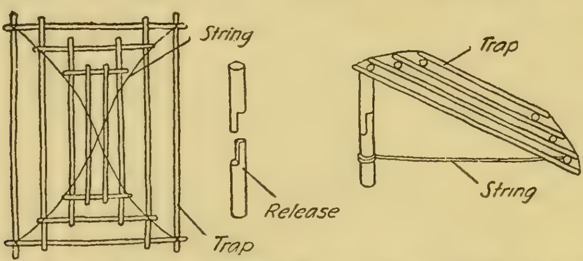

FIGURE 71.—Fall trap with rabbet-joint samson post. *Carib* of Dominica, West Indies. (After Taylor, 1938, fig. 37.)

The *Yagua* have a quite complicated fall cage-trap (fig. 72). The false floor, as part of the release mechanism, is also reported by Vogt for his *Cainguá* underpropped deadfall, with fall platform instead of fall cage. The *Yameo* and *Chébero* "Kastenfallen," with a falling

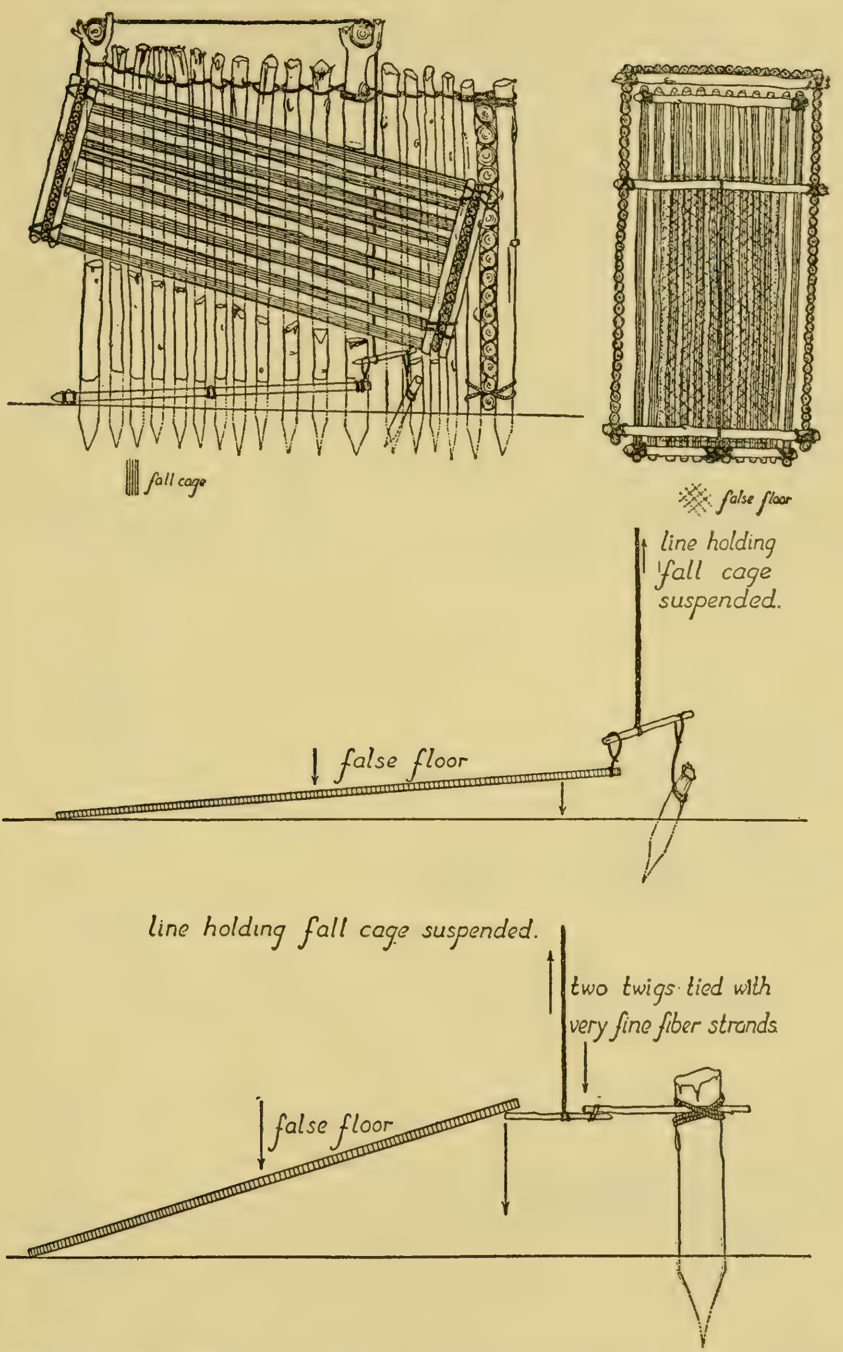
fall cage
false floor
line holding fall cage suspended.
false floor
line holding fall cage suspended.
two twigs tied with very fine fiber strands
false floor

FIGURE 72.—Fall cage-trap. *Yagua* of northeastern Perú. *Top:* Diagram of side and top views. *Bottom:* Two trigger mechanisms used for fall cage-trap. (After Fejos, 1943, figs. 15, 16.)

door, reported by Tessmann but not figured by him, may be of the type of Fejos' *Yagua* "door-trap." This *Yagua* door trap is a conical construction of stakes, with a ground-level opening or "door," above which is a rolled-up curtain resembling a Venetian blind; on release of the trigger the curtain rolls down over the door, thus imprisoning the bird or smaller mammal. A box trap for crabs, used by the Indians of the Pomeroon, is, in all probability, of foreign introduction—of African origin, Roth holds. (Cf. *Guaymí* box trap.)

**"Guillotine" traps.**—These are reported only for northeastern Perú, southeastern Colombia, and eastern Ecuador, among the *Yagua* (fig. 73), *Coto*, *Ocaina*, and *Jívaro*. The *Yagua* and *Ocaina* types are essentially identical; the release mechanism of the *Jívaro* type (Tessmann, 1930, p. 340) is a "kicker" one, quite like the vertical "kicker" trigger reported elsewhere in the world only, so far as the present writer can discover, from northern North America.

**Automatic spear and bow-and-arrow traps.**—The *Ssimaku* (and *Omurana*) automatic spear trap (fig. 74) is not, to the writer's knowledge, reported from elsewhere in South America. Roth's *Arawak*

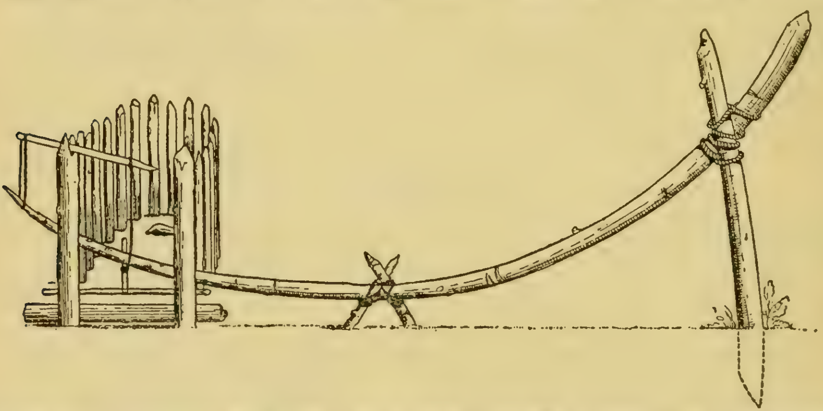

FIGURE 73.—Guillotine fall trap with kicker release. *Yagua* of northeastern Perú. (After Fejos, 1943, fig. 19.)

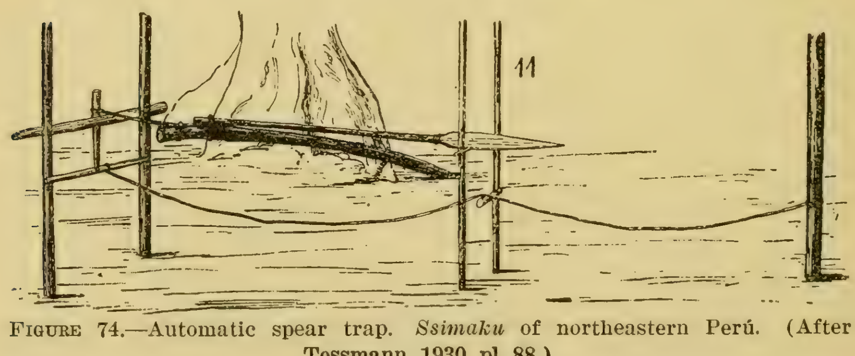

FIGURE 74.—Automatic spear trap. *Ssimaku* of northeastern Perú. (After Tessmann, 1930, pl. 88.)

automatic bow-and-arrow trap has essentially the same release mechanism as in the *Ssimaku* spear trap, except that the propelling force comes from the bent bow instead of from the bent sapling; it is also essentially identical with a well-known African trap. In all the foregoing automatic traps, the trigger mechanism is released by the animal striking against a string stretched across the trail. The string release in South America is reported only in such automatic spear and bow-and-arrow traps. Automatic bow-and-arrow traps are also reported among the *Apinayé* of the upper Tocantins and the *Guaymí* of Panamá. Automatic gun traps have been recorded among the *Cavina*, Guiana *Arawak*, and *Guaymí*.

**Pitfalls.**—Pitfalls for large and small mammals are of very wide, but not universal, distribution among the Indians of the Silval region of South America. They are not reported for the Marginal peoples living south of the Chaco, nor for the *Araucanians*, nor, so far as the present writer can discover, for the Andean Highlands and West Coast from Central Chile north. In many cases, pointed stakes are stuck in the bottom of the pit, these being poisoned among some of the northwest Amazon and northeastern Perú peoples. A *Lengua* jaguar pitfall is provided with a tethered looped lasso which tightens around the trapped animal's body.

**Hunting nets.**—Fixed nets for birds and land mammals are or were of widespread, but far from universal, use in both the Silval and Andean Highland and Coastal regions, but are not reported for the *Araucanians* or the hunting tribes of the open country south of the Chaco. The *Chiriguano* use a clap net spread on the ground for pigeons, and operated by the fowler, who pulls a string when the birds go after the maize bait put between the two halves of the net (Nordenskiöld, 1920, pp. 35–36).

**Miscellaneous devices.**—The use of a resinous or other viscous substance as bird lime is recorded for the *Carib* of Dominica and the *Yagua*, *Ocaina*, and *Muinane* of northeastern Perú and southeastern Colombia. Among the *Yahgan* a gorge hook, consisting of three pieces of sharp wood, the ends of which are covered with fish flesh, is used for taking cormorants. A funnel-shaped contrivance, placed at the opening of the hole or hollow log where a peccary has taken refuge, from which contrivance the issuing animal cannot extricate himself, is common among the *Carib* and *Arawak* tribes of the Guiana region (Farabee, 1918, 1924).

## FISH TRAPS

**Spring-hook and spring-basket traps.**—Spring-hook traps for fish are reported only from the *Arawak*, *Carib*, and *Warrau* of the Guianas, mostly Coastal groups, and from the *Tupí*-speaking *Oyampi* of Gui-

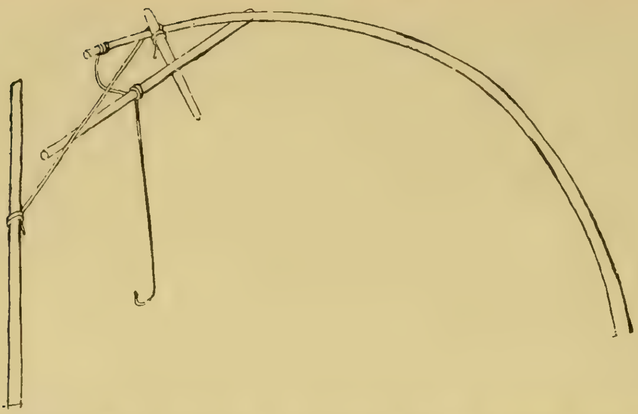

Figure 75.—Spring-pole fishhook. Pomeroon River, British Guiana. (After Roth, 1911, pl. 13.)

ana. One type is here reproduced (fig. 75) ; W. E. Roth (1924, 1929) describes and figures three other types with variant release mechanisms. Stedman (1806, 2 : 236–237) described and figured a very similar type as in use among the Dutch Guiana Negroes of his time, 1772–77.

The *Acawaí*, *Boviander*, and other tribes of the upper Demarara River of British Guiana use the spring-basket fish trap illustrated in figure 76, as did the Dutch Guiana Negroes of Stedman's time. When the release mechanism is sprung, the basket lid closes, but the basket

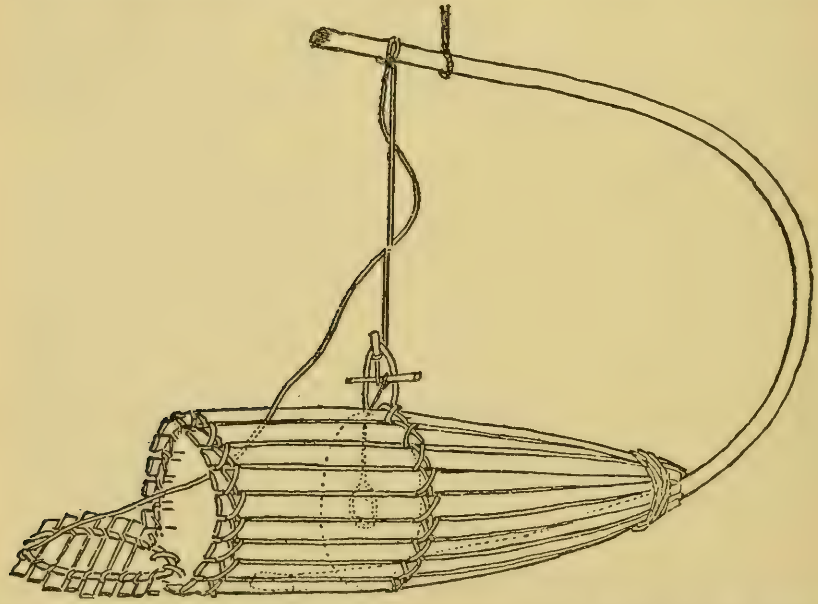

Figure 76.—Spring-pole fish basket. Upper Demerara River, British Guiana. (After Roth, 1929, fig. 11.)

itself remains under water. (Cf. also Tessmann, 1930, p. 447, for *Omurana* of northeastern Perú.) A somewhat similar spring-basket fish trap also occurs, in which the basket, on release, is jerked up above the surface of the water, with the fish caught head down in the basket; this type is reported by Roth for the *Paricuta* and *Waiwai* of British Guiana, by Farabee for the *Arawak* and *Carib* of the Guiana region, by Ehrenreich and Steere for the *Ipurina* and *Yamamadí* of the Purús River, and, to judge from the descriptions, by Nimuendajú for the *Uacá* of Uacá River, northeastern Brazilian Guiana, and by Martius for the *Tupí* of the Amazon.

The fact that these spring-basket traps are first reported by Stedman as in use by the Surinam Negroes and that they are found today in widely separated areas of west and east Africa suggests that they may have been introduced into South America by the Negro.

**Cylinder fall trap.**—The cylinder fall trap, illustrated in figure 77, is reported for the Indians of Guiana. When the trap is set, the open bottom of the cylinder is under water, a little distance above the underwater ground level. The fish enters the cylinder from below and nibbles the bait hung inside, thus releasing the trigger, whereupon the cylinder drops and imprisons the fish. A somewhat similar trap is described by Tessmann for the *Ocaina* of southeastern Colombia.

**Conico-cylindrical traps.**—Fish traps of reed, bamboo, lianas or wicker, pointed and closed at one end, and open at the other, are of widespread occurrence in the Silval area and regions adjacent thereto. In one type, of simple elongated funnel construction with one end fully open, the fish enters freely, gets stuck, and cannot back out (Nordenskiöld, 1924 a, pp. 89–90; Whiffen, 1915, pp. 112–113; Martius, 1867, 1: 610; Farabee, 1918, p. 56). In another type, in principle like our familiar eel-pots, the open end is provided with an elastic funnel of reeds pointing inward, which allows easy entrance but which bars exit. Such traps are often placed in the openings of weirs. The *Araucanians* take fish in ponchos and baskets baited and set under water.

**Gill-nets and night-lines.**—Set nets are sporadically reported, as among the *Carajá*, *Cayapa*, and *Jívaro*. Koch-Grünberg observed a night-line in use by the Indians of the upper Rio Negro. The night-line and the *Carajá* set-net are suspected of having been borrowed from adjacent Whites.

In hook-and-line fishing among the *Patamona* of the upper Potaro River, British Guiana, the line is passed over the leaves of a fibrous plant tied onto a stick fastened upright in the ground; when a fish bites, the loud swishing sound caused by the friction of the line over the serrated edges of the leaves warns the fisherman that he has a bite. A similar warning device is used by the *Guaymí* with baited fish traps.

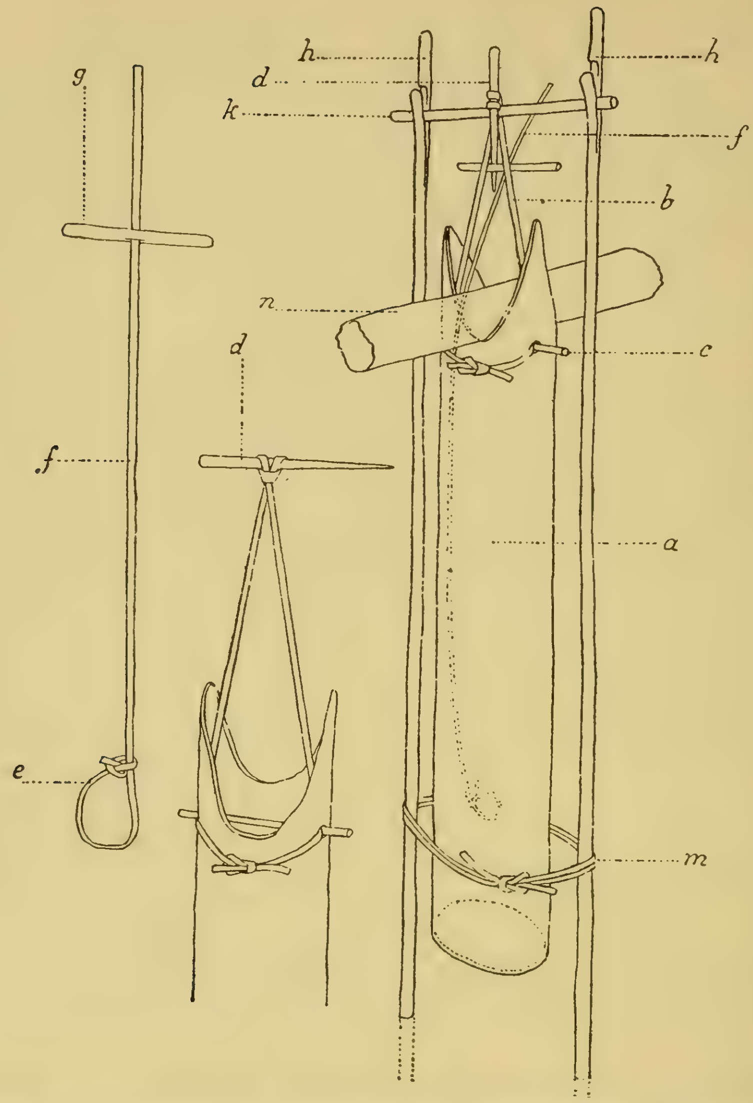

FIGURE 77.—Cylinder fall trap. Pomeroon River, British Guiana. (After Roth, 1911, pl. 12.)

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# FISH POISONS

By Robert F. Heizer

The use of plant piscicides, to judge from the extensive distribution (table 1), is probably an old cultural pursuit in native South America. This historico-geographical deduction is borne out by botanical studies (Howes, 1930, p. 135) indicating that certain plants have not been recorded away from the precincts of man, and are known only from cultivated specimens. For example, in British Guiana the following plants are known only from native habitations: *Clibadium sylvestre*, *Tephrosia toxicaria*, and *Euphorbia cotinoides*. It would appear that these plants, some of which have lost their power to flower or fruit, have been cultivated for a very long time. Such plants, which cannot propagate themselves, depend, like the banana, upon planting and tending by natives (Killip and Smith, 1931, pp. 405–407).

With the exception of the southern third of South America, fish poisons are generally distributed except where special local prohibitive factors are at work. Thus, piscicides are not used in the Gran Chaco owing to absence of proper plants, nor in western Perú because of the absence of slow-moving streams and small lakes (Killip and Smith, 1931, p. 402). This fishing method is not present among the *Tupi-Guaraní* of the upper Xingú River (Steinen, 1894, p. 236; Métraux, 1928 a, p. 93), but here the reason for its absence is not readily apparent.

Generally speaking, the northern half of South America uses chiefly *Lonchocarpus*, *Phyllanthus*, and *Tephrosia* plants for piscicides, while further south in Brazil, *Serjania* and *Paullinia* species are favored. Well over 100 different plants are on record as being used as piscicides by the South American natives; this total is greater than that from any other continent.

It should be noted that the use of plant piscicides extends from the South American mainland across the Antillean chain into the Southeastern United States, where it is restricted to the area east of the Mississippi River and south of the St. Lawrence River. Plant piscicides continue from the South American continent northward through Central America, and up the west coast of northern México where,

TABLE 1.—*Geographical distribution of South American Indian piscicides*

| Piscicide |  | Argentina | Bolivia | Brazil | Cayenne | Chile | Colombia | Costa Rica | Ecuador | Guiana | Paraguay | Perú | Surinam | Venezuela |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scientific name | Folk name |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Abuta imene* | Taraira-moira |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Agave americana* |  |  |  |  |  |  |  |  |  |  |  |  |  | × |
| *Alexa imperatricis* | Hairiballi |  |  |  |  |  |  |  |  | × |  |  |  |  |
| *Anona spinescens* | Araticum do Brejo |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Antonia ovata* | Inyáku |  |  |  |  |  |  |  |  | × |  |  |  |  |
| *Apurimacia incarum* | Chancanhuai |  |  |  |  |  |  |  |  |  |  | × |  |  |
| *Bauhinia guianensis* |  |  |  | × |  |  |  |  |  | × |  |  |  |  |
| *Bowdichia virgilioides* | Sebipira |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Buddleia brasiliensis* | Barbasco |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Byrsonima crassifolia* | Chaparro de manteca |  |  |  |  |  |  |  |  |  |  |  |  | × |
| *Cardiospermum grandiflorum* |  |  |  |  |  |  |  |  |  |  | × |  |  |  |
| *Caryocar glabrum* |  |  |  |  |  |  |  |  |  | × |  |  |  |  |
| *Cassia hirsuta* | Piami |  |  |  |  |  |  |  |  | × |  |  |  |  |
| *Centrosema plumieri* | Guiana-timbó |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Cestrum laevigatum* |  |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Clathropis brachypetala* | Arumatta |  |  |  |  |  |  |  |  | × |  |  |  |  |
| *Cleome spicata* | Tareraiya |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Clibadium asperum* | Conami |  |  |  |  |  |  |  |  | × |  |  |  |  |
| *barbasco* | Barbasco |  |  |  |  |  |  |  |  |  |  |  |  | × |
| *heterotrichum* | Guaco, huaca |  |  |  |  |  |  |  |  |  |  | × |  |  |
| *schomburgkii* | Kunambi |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *strigillosum* | Guaco |  |  |  |  |  |  |  |  |  |  | × |  |  |
| *surinamense* | Conami |  |  | × |  |  |  |  |  | × |  |  |  |  |
| *sylvestre* | *Peru:* Guaco, huaca |  |  | × |  |  |  |  |  |  |  | × |  |  |
| *Clitoria amazonum* | Barbasco |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Cusparia trifoliata* | Cuspa |  |  |  |  |  |  |  |  |  |  |  |  | × |
| *Dahlstedtia pinnata* | Goranatimbó |  |  | × |  |  |  |  |  |  |  |  |  |  |
| sp | Timbó |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Derris elliptica* |  |  |  |  |  |  | × |  | × |  |  |  |  |  |
| *guianensis* | *Brazil:* Timbó de matta, timbo-rana, timbó cipo, timbó assu; *Guiana:* Hikuritarifon. |  |  | × |  |  |  |  |  | × |  |  |  |  |
| *Derris negrensis* | Timbó guassis, timbó-rana |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Dipladenia illustris* |  |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Enterolobium timboüva* | Timbó-uba, timborá, orelha de preto |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Euphorbia caracasana cotinoides* |  |  |  |  |  |  |  |  |  |  |  |  |  | × |
| *cotinoides* | *Brazil, Guiana:* Gunapalu; *Brazil:* Leiteira, assucu-l; *Cayenne, Surinam:* Koenapaloe. |  |  | × | × |  |  |  |  | × |  |  | × |  |
| *Gustavia augusta* |  |  |  |  |  |  |  |  |  | × |  |  |  | × |
| *brasiliana* | Janiparandiba, japarandi, geniparana, japarandiba |  |  | × |  |  |  |  |  |  |  |  |  |  |
| *Hura crepitans* | *Brazil:* Oassucú, arceira, assacú, assaca; *Perú:* Catană; *Venezuela:* Jabillo, ceibo blanco. |  |  | × |  |  |  |  |  |  |  | × |  | × |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Ichthyothere cunabi* | Cunabi, cunambi | | | × | | | | | | | | | | |
| *terminalis* | Galicosa, jarilla, dictamo real | | | | | | | | | | | | | × |
| *Indigofera lespedezioides* | Timbó mirim | | | × | | | | | | | | | | |
| *Jacaranda procera* | | | | | | | | | | × | | | | |
| *Jacquinia arborea* | Barbasco | | | | | | | | | | | | | × |
| *aristata* | | | | | | | | | | | | | | × |
| *mucronulata* | Barbasco, olivo, chilca, chirca | | | | | | | | | | | | | × |
| *revoluta* | | | | | | | | | | | | | | × |
| sp. | Teterumballi | | | | | | | | | × | | | | |
| *Joannesia princeps* | Anda, anda-assu | | | × | | | | | | | | | | |
| *Leguminosae* sp. | Piracu-uba | | | × | | | | | | | | | | |
| *Lonchocarpus densiflorus* | *Guiana:* Hairi, "bastard" hairi | | | | × | | | | | × | | | × | |
| *floribundus* | Timbó venenoso | | | × | | | | | | | | | | |
| *nicou* | *Brazil:* Timbó legitimo, timbó macaquinho; *Guiana:* Nicou, inekou, "real" hiaree, heirri; *Perú:* Conapi, pacai, barbasco, kumu, cubé. *Cayenne, Surinam:* Neka. | | | × | × | | | | | × | | × | × | |
| *rariflorus* | *Brazil:* Taraira-moira; *Guiana:* Fai, faia noroka | | | × | | | | | | × | | | | |
| *Lonchocarpus rufescens* | *Guiana;* Hairi | | | | × | | | | | × | | | × | |
| *urucu* | Timbó urucú, timbó carajuru, timbó rouge | | | × | | | | | | | | | | |
| *violaceus* | *Cayenne, Surinam;* Nekoe, hojali | | | | × | | | | | | | | × | |
| *Lupinus mutabilis* | Tallhue | | | | | | | | | | | × | | |
| *Magonia glabrata* | Tingui, timbó assu | | | × | | | | | | | | | | |
| *pubescens* | Tingui, tingui capeta | | | × | | | | | | | | | | |
| *Manihot esculenta* | | | | × | | | | | | × | | | | |
| *Muellera frutescens* | Hairiballi | | | | | | | | | × | | | | |
| *Odontadenia cururu* | Cipó cururú | | | × | | | | | | | | | | |
| *Pachyrrhizus angulatus* | | | | × | | | | | | | | | | |
| *Paullinia australis* | Timbó, timbó de Rio Grande | | | × | | | | | | | | | | |
| *cupana* | Guaraná | | | × | | | | | | | | | | |
| *cururu* | Cururú, cipó cruape branco | | | × | | | | | | | | | | |
| *meliafolia* | Timbópeba | | | × | | | | | | | | | | |
| *pinnata* | Cururú-ape, matto porco, cruape vermelho, timbó cipó | | | × | | | | | | | | | | |
| *thalictrifolia* | Jacatupé | | | × | | | | | | | | | | |
| *Phyllanthus cladotrichus* | Herva de pombinha da serra | | | × | | | | | | | | | | |
| *conami* | *Brazil;* Conami, timbó conabi; *Guiana;* Bois a enivrer, tue poisson, conami; *Cayenne, Surinam;* Barbasco. | | | × | × | | | | | × | | | × | |
| *piscatorum* | *Brazil;* Tingui de peixe, tingui de Pérou; *Venezuela:* Barbascayo. | | | × | | | | | | | | | | × |
| *Piper* spp. | Warakabakoro, tona | | | | | | | | | × | | | | |
| *Piscidia carthagenensis* | *Brazil;* Timbo, timbo boticario; *Venezuela;* Borracho, jebe, barbasco jaune. | | | × | | | | | | | | | | × |
| *Polygonum acre* | *Brazil;* Herbe de bicho, catayo; *Argentina;* Ca atay; *Paraguay;* Yerba picanta, yerba del diablo. | × | | × | | | | | | | × | | | |
| *glabrum* | Barbasco, chiguirera | | | | | | | | | | | | | × |
| *Pothomorpha peltata* | Duburibanato | | | | | | | | | × | | | | |
| *Pyranhea trifoliata* | Piranha-úba, pyranheira, pirand-úba | | | × | | | | | | | | | | |
| *Ruprechtia laurifolia* | Timpa-pêba, timbubaba | | | × | | | | | | | | | | |
| *Sapindus saponaria* | *Brazil;* Quiti, maca-acaipú, casita, jaquitir-guassú; *Perú;* Sullucu. | | | × | | | | | | | | × | | |

TABLE 1.—*Geographical distribution of South American Indian piscicides*—Continued

| Piscicide | | Argentina | Bolivia | Brazil | Cayenne | Chile | Colombia | Costa Rica | Ecuador | Guiana | Paraguay | Perú | Surinam | Venezuela |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scientific name | Folk name | | | | | | | | | | | | | |
| *Serjania acuminata* | Timbó de peixe, timbo legitimó | | | × | | | | | | | | | | |
| *communis* | Timbó-meudo | | | × | | | | | | | | | | |
| *cuspidata* | Timbó capelludo | | | × | | | | | | | | | | |
| *dentata* | Timbó de restingas | | | × | | | | | | | | | | |
| *erecta* | Timbó bravo, cipó de timbó, turari | | | × | | | | | | | | | | |
| *glabrata* | *Brazil;* Tamuja; *Perú;* Verap | | | × | | | | | | | | × | | |
| *ichthyctona* | Timbó, timbó de peixe | | | × | | | | | | | | | | |
| *inebrians* | Barbasco | | | | × | | | × | | | | | × | |
| *lethalis* | *Brazil;* Cipó de timbó, matta fomé, pehko; *Bolivia:* Pehko, sacha. | | × | × | | | | | | | | | | |
| *noxia* | Timbó de leite | | | × | | | | | | | | | | |
| *paucidentata* | Abaho | | | | | | | | | × | | | | |
| *piscatoria* | Tingi, tingui de peixe | | | × | | | | | | | | | | |
| *purpurascens* | Timbó vermelho | | | × | | | | | | | | | | |
| *pyramidata* | Casire | | | | | | | | | × | | | | |
| *rubicaulis* | Verap | | | | | | | | | | | × | | |
| *rufa* | Verap | | | | | | | | | | | × | | |
| *serrata* | Timbó de peixe | | | × | | | | | | | | | | |
| spp. | Hebechiabo, kotupurru | | | | | | | | | × | | | | |
| *Talisia esculenta* | Pitombeira | | | × | | | | | | | | | | |
| *squarrosa* | White moruballi | | | | | | | | | × | | | | |
| *Tapura guinensis* | Bois de golette | | | | | | | | | × | | | | |
| *Tephrosia cinerea* | *Guiana;* Sinapou; *Venezuela;* Barbasco blanc | | | | | | | | | × | | | | × |
| *nitens* | Timbo caa, ajare | | | × | | | | | | | | | | |
| *Tephrosia toxicaria* | *Brazil:* Timbó-ubá, onabouboue, anil bravo, timbó de Cayenne; *Perú:* Cubé, barbasco; *Surinam, Cayenne:* Wanamoe, doekali; *Venezuela:* Barbasco de raiz, kouna; *Colombia, Ecuador:* Barbasco; *Guiana:* Counami, yarro conalli. | | | × | × | | × | | × | × | | × | × | × |
| *Thevetia ahouai* | Agal, ahoui-mirim | | | × | | | | | | | | | | |
| *peruviana* (syn. *nerifolia*) | *Brazil:* Ahoui-guacu, jorro-jorro: *Venezuela:* Caruache cascabel, lechero, cruceta real. | | | × | | | | | | | | | | × |
| *Thinouia paraguayensis* | | | | | | | | | | | × | | | |
| *Tripterodendron felicifolium* | Farinha secca | | | × | | | | | | | | | | |
| *Tupa feuillei* | | | | | | × | | | | | | × | | |

after a brief gap, they reappear in extensive use throughout California and more rarely in the plateau and great basin areas to the north and east. The Columbia River marks their most northerly extension in the western regions of North America. Although fish poisons are used widely in the Old World, the nearest geographical occurrence to the Columbia River instance is in Japan. In view, therefore, of the isolation of New World fish poisoning, and because of the great weight of numerical occurrence and continental spread, a South American origin of the use of plant piscicides seems likely. Métraux (1928 a, p. 93) suggests the recent origin of fish poisoning in the Amazon Basin, yet the number of plant species employed, extensive distribution of the practice, and alteration of species due to cultivation all argue for respectable antiquity. Nordenskiöld (1924 a, p. 36) suggests that the extraction of the poisonous principle of bitter manioc (*Manihot esculenta*) may have first been due to its use as a piscicide.

The preceding table gives a partial list of South American plant species used as piscicides, and their folk names. Further data may be found in Killip and Smith (1935), who list 140 plant species identified by 341 folk names.

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# FIRE MAKING

By John M. Cooper

All South American peoples of whom we have adequate information are credited with knowing how to make fire. There have been rare reports, but no well authenticated ones, of tribes lacking such knowledge. One such report, Whiffen's (1915, p. 48) regarding the *Witoto*, *Boro*, and other tribes south of the Japurá River, has been definitively corrected by the later field work of Farabee and Tessmann. Another, Tessmann's (1930, p. 177) regarding the *Nocamán* of the upper Ucayali River region, of whom there were only three known survivors, rests on the unsupported statements of two *Nocamán* working at the time for a White man.

The two chief aboriginal methods of fire making on the continent are those of rotary friction and of percussion.

The rotary friction method, with use of a plain hand drill, is by far the more common of the two methods, occurring as it does throughout the southern Middle American and Antillean regions and almost the whole continental South American region down to, but not beyond, the Strait of Magellan. Aboriginal use of cord drills, bow drills, or pump drills in fire making is, to the writer's knowledge, nowhere reported.

There are two main South American techniques of fire drilling: the one without and the other with complete piercing through of the hearth.

In the first of these, which is the one prevalent over most of the continent (Nordenskiöld, 1924 a, table pp. 123–125, map 13), the hearth is either of greater diameter than the drill and has one or more bowl-shaped depressions or sockets from which lead lateral (fig. 78) or terminal (fig 79) canals or slots, or else is about the same diameter and without slots (fig. 80). When fire is made with use of the socketed and slotted hearth, the wood meal ground off by friction gathers at the slot and ignites. In some cases, as among the *Warrau* (Im Thurn, 1883, p. 259), who use a very friable wood for their drill and hearth, the ignited wood meal itself serves as tinder; in others, the smoldering wood meal makes its way along the slot to the tinder placed at the outer end thereof. When fire is made with use of the nonslotted hearth of diameter not greater than that of the drill, the rotation of the drill grinds away the side (or sides) of the hearth, thus forming a notch, and the powdered wood spills over the side of the socket into the tinder placed alongside the hearth. Without some such "escape," the wood meal would not ignite. (Cf. M. Schmidt, 1903, p. 78.) In neither of the above cases is the hearth pierced all the way through by the drill.

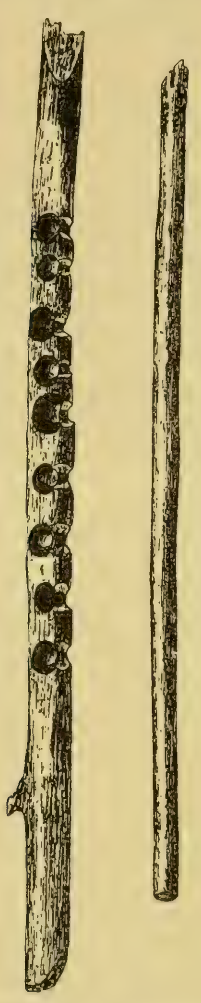


FIGURE 78.—*Guató* fire drill and hearth. (⅓ actual size.) (After Max Schmidt, 1903, fig. 3.)

The drill used with this nonpierced hearth is most commonly a single long thin stick, but among a great many tribes—mostly but not exclusively within a broad east-west belt extending from the Chaco across the upper Paraguay-Paraná area to the Brazilian coastal region—it is a composite affair. Usually in this belt, the composite drill consists of a short stick which when fire making becomes necessary is firmly fitted into the distal end of an arrow shaft from which the arrowhead has been removed. Or else, as among the *Arawak* of the Pomeroon, British Guiana, the short stick is tied to a longer one. The use of this short drill head obviates the inconvenience of carrying around a full-length single-piece drill. In some cases, drill and hearth are specifically recorded as being made of two kinds of wood, the one softer than the other; in other cases, of the same kind.

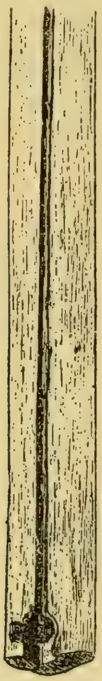


Figure 79.—Hearth for fire drill, *Yamamadi*. (⅓ actual size.) After Max Schmidt, 1903, fig. 5.)

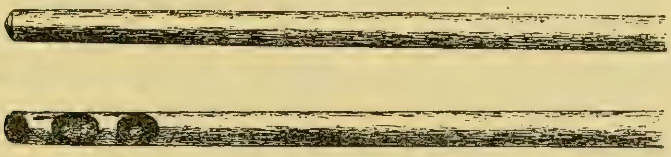


Figure 80.—*Botocudo* fire drill and hearth. (⅓ actual size.) (After Max Schmidt, 1903, fig. 2.)

What appears as a variant of the foregoing method was reported

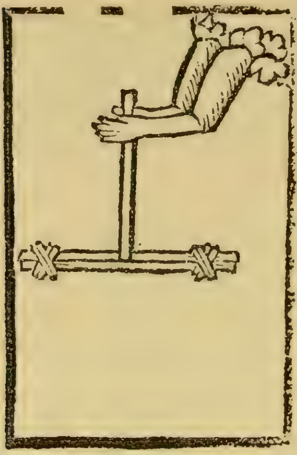


Figure 81.—A sixteenth-century Hispaniola drill. The earliest illustration of American Indian fire making. (After Oviedo y Valdés, 1535, p. 61 verso.)

earlier as in use among the Indians of Hispaniola (fig. 81), of Nicaragua, and of elsewhere on the islands and mainland (Oviedo y Valdés, 1851–55, lib. 6, cap. 5, p. 61 verso) and has been recorded recently (Kok, 1926, p. 933) for the Indians of the Rio Papurí, a right tributary of the Uaupés. In this variant, the hearth consists of two pieces of wood firmly tied together, the drill being rotated with its lower end between the two. It should be added that the wood cut (fig. 82) given by Benzoni (1565, p. 102 recto) of the fire drill used in Nicaragua, where

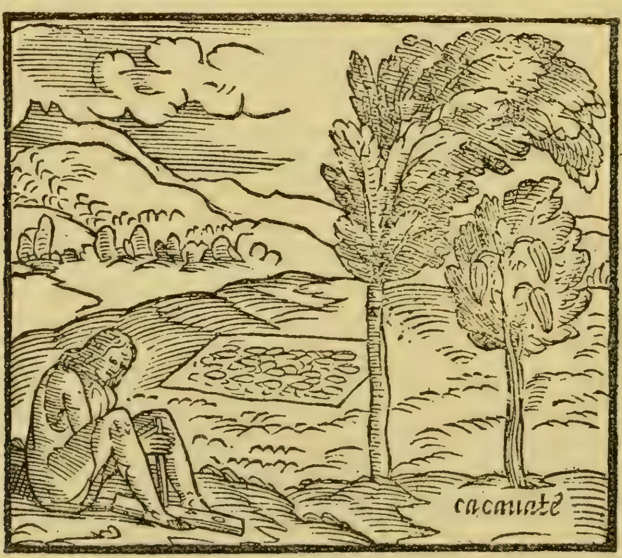


Figure 82.—Fire drilling in early Nicaragua. (After Benzoni, 1565, p. 102 recto.)

he spent more than a year, and "throughout all India" (ibid., p. 103 recto) shows clearly an ordinary one-piece hearth.

In the second of the two main South American methods of fire drilling, the hearth, a relatively thin slab of bamboo or other wood, is pierced all the way through by the head of the twirled drill, and the flowing wood particles drop down on the tinder (fig. 83). This second method appears to have a very limited distribution; it is recorded for several of the eastern Bolivian tribes (Nordenskiöld, 1924 a, pp. 123–125), the Indians of the Javary River, and, in somewhat variant forms, for the *Parintintin* of the Madeira River and the *Taulipáng* of northern Brazilian Amazonas.

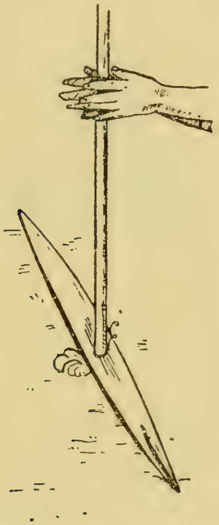


FIGURE 83.—Pierced-hearth fire drilling. (After Nordenskiöld, 1924 a, map 13.)

In the eastern Bolivian cases, the arrow itself becomes the fire-making apparatus, the de-headed shaft being used as the drill and the bamboo head as the hearth. The *Parintintin* hearth (fig. 84) needs no lateral slot; the wood meal collects beneath the arched underside of the hearth (Nimuendajú, 1924, pp. 251–252). Among the *Taulipáng*, two or three short pieces of cane are split lengthwise and the halves are firmly fastened one on top of the other, with wads or balls of cotton as tinder secured between the strips (fig. 85); as the rotated drill pierces through the strips of this compound hearth the glowing wood dust falls upon and ignites the cotton (Koch-Grünberg, 1917–28, 3:46–47).

Fire drilling starts with the operator's palms twirling the drill with hard downward pressure so that his hands gradually pass downward. If the weather be damp or the implements not quite dry, two operators may work together, the second starting at once at the top when the hands of the first reach the low position. Otherwise the single operator has to shift his hands very rapidly from the low to the top position. The time required to make fire by drilling varies: Von Rosen (1924, p. 131) saw a *Chorotí* once drill fire in 30 seconds and on many occasions saw it done in less than a minute; Koch-Grünberg's (1917–28, 3:47) *Taulipáng* operator took 1 minute and 37 seconds. Fire making by percussion appears from our scant reports to take longer. (For good detailed descriptions of fire drilling, cf.: Im Thurn, 1883, pp. 257–259; Von Rosen, 1924, pp. 128–132.)

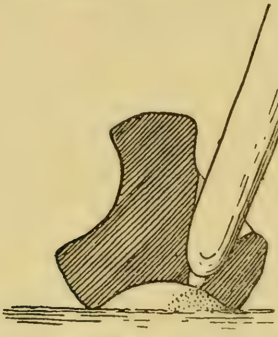
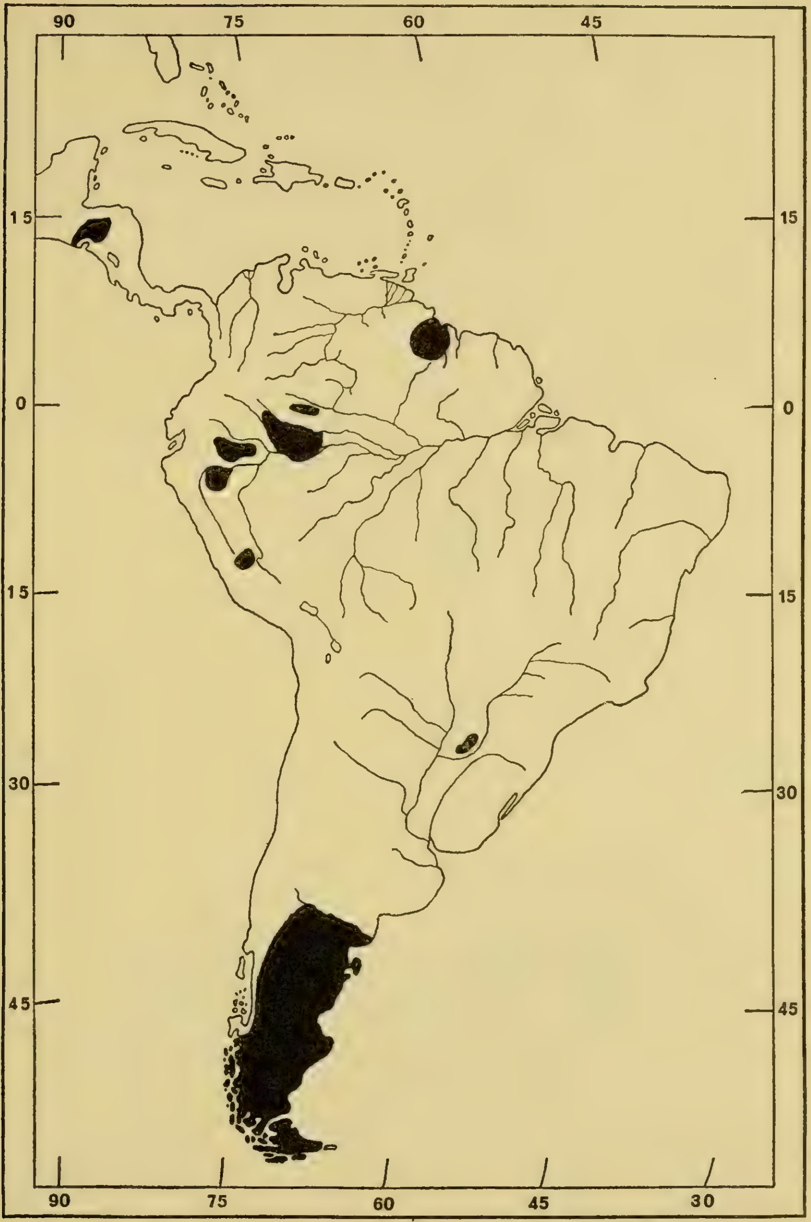


FIGURE 84.—Fire drill with pierced hearth, *Parintintin*. (After Nimuendajú, 1924, fig. 7.)

Fire making by the percussion or strike-a-light method has a very broken distribution (map 8) on the South American continent but is chiefly found in two areas, the Fuegian and the upper Amazonian-Montañan. Among the *Yahgan*, *Alacaluf*, and *Ona* of Fuegia, fire making by striking flint on pyrites, and allowing the sparks to fall on the tinder is the only aboriginal method known to them. The *Tehuelche* of the mainland were very early reported as using the fire drill; their use since at least the early 19th century of the percussion method also pretty clearly indicates Fuegian influence. A large proportion, a dozen or more in all, of the tribes of the upper Amazon and Montaña do or did use the percussion method as the only or alternative or earlier one (Farabee, 1922, p. 138; Kok, 1926, p. 933: Tessmann, 1930, passim; Fejos, 1943, p. 59). Outside of the Fuegian and upper Amazonian areas, fire making by percussion is reported for: the *Guayakí*, by Vellard; the Chaco, when flint is available, by Wavrin (1926, 1:22), but the reference, which lacks confirmation, may be to the White man's flint and steel; and the *Lenca* of southern Middle America. Fire making by striking two stones together occurs in a *Taulipáng* folk tale recorded by Koch-Grünberg (1917–28, 3:47–48) and in a Guiana *Carib* one recorded by W. E. Roth (1915, p. 192), and old *Arawak* from the Essequibo in British Guiana assured Roth that they could remember the time when their people used to catch fire


90
75
60
45
15
15
0
0
15
15
30
30
45
45
90
75
60
45
30

MAP 8.—Distribution of percussion method of fire making.

with two "stones" and cotton (Roth, W. E., 1924, p. 70). To judge from the manner in which the evidence for the occurrence of fire making by percussion in South America has accumulated in the last two or three decades, it seems likely that more extensive and intensive field work will yield other instances.

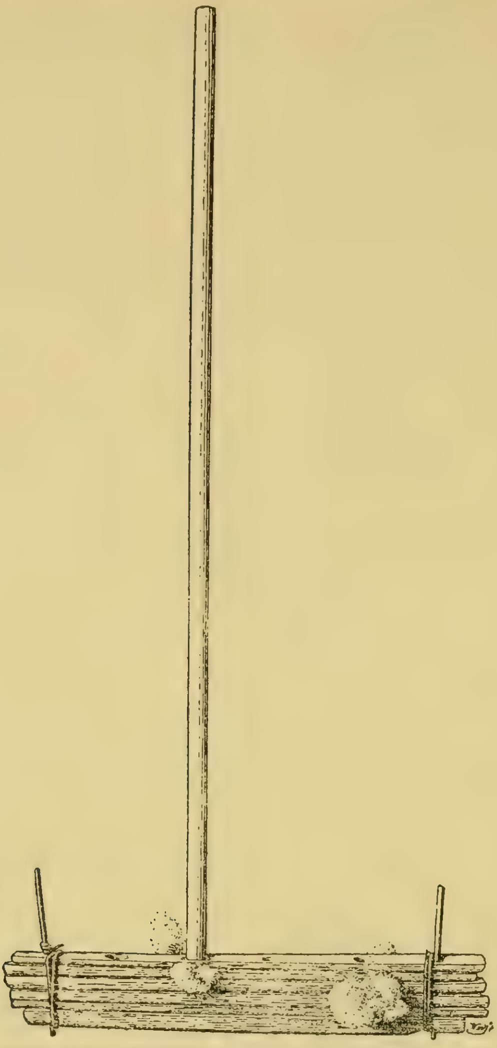


FIGURE 85.—Fire drill with compound pierced hearth, *Taulipáng*. (After Koch-Grünberg, 1917–28, vol. 3, pl. 40.)

It is quite possible that in some of the foregoing cases of fire making by percussion we have to do with native imitation of or substitution for the White man's flint and steel, which from early times became widely diffused among those Indians in closer contact with the Whites; but certainly not in all cases and probably not in most. That the Fuegian use is aboriginal admits of no serious doubt in view of the fact that it was found as early as 1580 by the Sarmiento expedition among the Canoe Indians near modern Punta Arenas. Aboriginality is also strongly suggested by the bunching of occurrences among the fairly isolated upper Amazon and Montaña tribes, as well as by the embedding of the technique in Guiana folklore and by the fairly definite statement of W. E. Roth's old Guianan *Arawak* informants. On other continents as well—North America, Africa (Talbot, 1926, 3: 956), and from recent reports on Australia (Mountford and Berndt, 1941, pp. 342–344)—where fire making by friction is the prevalent method, the percussion technique also occurs.

Two other and much rarer aboriginal types of fire making remain to be mentioned, the fire saw and the "mirror" methods.

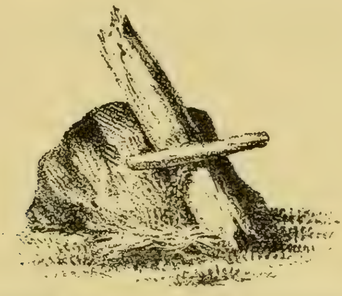


FIGURE 86.—*Cainguá* fire saw. (After Rengger, 1835, pl. 2.)

Rengger (1835, pp. 130, 493, pl. 2, fig. 19) clearly describes and as clearly figures a fire saw which he personally observed in use among the *Caaygua* (*Cainguá*) (fig. 86). The cacique operator "took two pieces of wood, the one soft and the other hard, and rubbed the one against the other in such manner that the grains crossed (de manière que les fibres se croisaient)." Writing of the *Island Carib* of his day, Rochefort (1658, p. 440) states that they make fire by rubbing two pieces of wood one against the other in a different manner from that of the Indians of the mouth of the Amazon, whose fire drill method he minutely and clearly describes. A final judgment as to whether these two cases represent the fire saw is not possible, but there seems to be no good reason for rejecting Rengger's testimony; Rochefort's is much less clear.

Finally, there is the passage from Garcilaso de la Vega (1723, [1869] lib. 6, cap. 22, p. 198) attributing fire making by the "mirror" method to the *Inca* of his time. At the great sacrifice of the feast of the sun, new fire was made by the chief priest by means of a highly burnished concave plaque which was part of his armlet. The solar rays caught by the plaque were focused on well-carded cotton, which soon ignited. If the sun was not out at the time of the sacrifice, a drill was used. It is not impossible that Garcilaso's imagination may have been stimulated in this instance by what he learned after he went to Spain, but on the other hand his sober and circumstantial story looks by no means fantastic. The discovery of such a method does not presuppose any deep knowledge of the laws of reflection. There is to date, however, no specific documentary or archeological confirmation of the reported custom.

The fire thong, fire plow, and fire piston are not reported for any tribe of South America.

Tinders used in fire making differ greatly from tribe to tribe and from area to area, ranging from bird down to dried fungus, punk wood, and dried leaves, grass, palm shoots, and other plant parts or products. Within the areas where cotton is grown it is, when available, one of the most common kinds of tinder.

Fire fans are widely used on the continent, mostly east of the Andean Highlands as far down as the Chaco and southern Brazil, but not south thereof, nor by the *Quechua* or *Aymara* of the Sierra (Nordenskiöld, 1919 a, pp. 72–74, and map 9; W. Schmidt, 1913, pp. 1082–1083). Woven fans of palm leaves are the more common, through central, northern, and eastern South America. Fans made of feathers have a more westerly distribution, and also occur in southern Middle America (*Mosquito-Sumo*). On the southern continent, they are found mostly along or adjacent to the eastern slope of the Andes—especially in the upper Amazon region, the Montaña, and the Chaco.

As a general rule, fires once lit are not allowed to die, but are carefully conserved and kept going day and night. Within or near the dwelling, when not in use, they are fed roots, rotten wood or other slow-burning material or may be banked under ashes. The arrangement of the fire logs in star-shaped fashion with the burning ends toward the center is here and there reported and is probably fairly widespread, and easily lends itself to conservation of the fire; as the fire dies down the logs are pushed inward. On journeys by land, fire is commonly carried along—as fire sticks or firebrands, in clay pots or in sections of bamboo, on sherds, and so forth; on journeys by water, through similar means, or, as among the *Yahgan* and *Alacaluf* at one end of the continent and the *Taulipáng* at the other, on an earthen or shell hearth aboard the watercraft.

Torches of many kinds are used: bundles of dry grass stalks, plain bark, resin-rich woods, bark or other plant material dipped in or impregnated with wax, oil, resin, or gum; bark tubes filled with copal resin; and so forth. There are no lamps. Candles of various types are recorded, usually among tribes who had a good deal of contact with Whites.

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# THE SOCIAL AND POLITICAL ORGANIZATION OF THE ANDEAN PEOPLES

By PAUL KIRCHHOFF

## INTRODUCTION

The Andean peoples, comprising the inhabitants of the plateau countries of Bolivia, Perú, Ecuador, and Colombia, and the coast of Perú and Ecuador, have a form of social organization that differs strikingly, both in individual institutions and in general structure, from that of the remaining peoples of South America, but that exhibits remarkable similarities with that of the peoples of Meso-America. These similarities, however, remain outside of the scope of this article.

The difference between the Andean area and the rest of South America is that the social organization of the latter is based essentially on kinship whereas that of the Andes has a whole set of institutions not based on kinship. Whether these institutions originally developed from a kinship structure or became superimposed upon it, they have become so important that it is precisely the interplay between the institutions which are not based on kinship and those which are that constitutes the structure of Andean society as we know it. Consequently, Andean society, much as Meso-American society, is in a transitional stage in which nonkinship institutions (social stratification and a government organized for the domination of one people by another) rest, historically and functionally, upon the foundation of an institution based on kinship, the ayllu, which we call a clan,[1] since we define the latter as "a permanent group based on actual or supposed common descent of its members" (Kirchhoff, The Principles of Clanship, MS. 1935), a definition broad enough to include both unilineal, exogamous clans and nonexogamous, and therefore not strictly unilineal clans (among the latter, the Scottish "clan," the Roman "gens," the Mexican "calpulli," and the Andean "ayllu").

While this characterization holds only for the more recent developmental stages of Andean society, as exemplified by the so-called *Inca* Empire, even in earlier times, when still based essentially on kinship, the social organization of the Andean peoples must have differed markedly from that of the other South American peoples who were organized in clans (the majority of South American Indians still live on a preclan basis), in that Andean clans were nonexogamous and therefore not truly unilateral.

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[1] In North American usage, a clan is ordinarily defined as both unilineal and exogamous.—EDITOR.

A great difficulty to a proper understanding of the growth and nature of Andean society, and above all of the relationship, genetic or otherwise, between this type of clan and the characteristic institutions of Andean society which are not based on kinship, is not only the small number and lack of preciseness of relevant data, but their narrow geographical and chronological range. The aboriginal social organization of most Andean peoples who remained outside of the *Inca* Empire is just as imperfectly known (except for the *Chibchan Muisca* of the Colombian Highlands) as that of the peoples who, originally independent, had been incorporated into it by the time of the Discovery.

## KINSHIP AND SOCIAL STRATIFICATION

Throughout the Andean area the fundamental features of social institutions which are based on kinship are remarkably uniform and remarkably simple. In marked contrast to peoples organized in exogamous clans,[2] where tribe and clan have different structure, the Andean clans are nonexogamous and the tribe is really nothing but a superclan, or rather, the clan simply a subtribe.

Neither tribe nor clan can be said to be truly endogamous, if by endogamy we understand a rule as strict as exogamy, i. e., a rule which applies to every member of the group and violations of which are censured, if only morally. The Andean tribe, and even more so the Andean clan, showed, however, a marked tendency towards endogamy, a tendency which was more pronounced among clan members who were commoners than among noblemen. This difference in marriage restrictions between commoners and noblemen seems, as a matter of fact, to be a basic and inherent feature of Andean clan structure and not a feature introduced from without.[3] (See below.)

Because the Andean clan tended toward endogamy, at least for commoners, the overwhelming majority of clan members lived together in one place, whether in a village, as was usual in the Highlands, or in a section (barrio) of a town, as along the Coast. Another characteristic of these clans was patrilocal residence, both in intravillage or intrabarrio marriages and in intervillage or interbarrio marriages. In the latter case, children were counted members of that clan in whose village or barrio their parents resided, but because such a marriage was an exception rather than the rule, they do not justify characterizing this type of clan as patrilineal, i. e., unilateral. A more correct description and definition of its structure would be that of a localized patrilocal clan with a tendency toward endogamy for those of its members that are commoners. If some Andean tribes had practiced matrilocal residence, the practical result would have been almost the same, provided their clans had the other characteristics previously mentioned. Such clans would have to be defined as localized matrilocal clans with a tendency toward endogamy for those of the members who are commoners. A matrilocal residence has not been reported but we suspect that it was practiced, most likely by some tribes of the Ecuadorian and Colombian Highlands and of the Peruvian and Ecuadorian Coast.

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[2] Of the *Chibchan* tribes, only those with a non-Andean type of culture, from the upper Magdalena Valley to the frontiers of Central America, have exogamous, unilateral (matrilineal) clans.

[3] It may be said in passing that true clan endogamy, in the sense of a rule as strict as clan exogamy, not only is not found anywhere in the world, but does not appear to be feasible, since a clan may at any moment of its history be or become too small for its application. Though the opposite of clan exogamy is logically clan endogamy, in reality there is never more than a tendency toward clan endogamy (Kirchhoff, ms.).

Not only have the tribe and clan essentially the same structure, but so has the moiety, an intermediate grouping. Wherever it occurred, the Andean moiety,[4] was nonexogamous, being a mere grouping of several nonexogamous clans and probably showing the same tendency toward endogamy as the clans.

A characteristic feature reported only for the peoples who in recent times belonged to the *Inca* Empire but which had probably existed throughout the Andean area is the preservation by the clan members of the mummified body of its original founder, apparently everywhere a man. In the 4 years from 1615 to 1619, a rather late period, the Spanish authorities took from the Indians of Perú 1,365 such "mummies of ancestors" (letter by Francisco de Borja to the King of Spain, dated April 8, 1619 [5]). Unfortunately, it is not stated how many mummified women (not founders of clans, but their wives) are included in this number. We know that the clans founded by the *Inca* rulers preserved not only the body of the founder but that of his wife. (See below, p. 297.) Several sources have preserved the tradition that the two moieties of the *Inca* (i. e., the tribe, not the Empire) were founded by the ruler, Manco Capac, and by his sister-wife, respectively. Although Andean tribes and clans were alike in structure, the latter simply being subdivisions of the former, we have no evidence that the bodies of tribal ancestors, as opposed to clan ancestors, were mummified. There are, however, traditions of a common descent of various tribes, whose founders' relationship to the tribes would be similar to that of the founders of clans within each tribe.

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[4] We have no information about moieties among the Highland *Chibchan* tribes. They are known among some *Chibchan* tribes with a non-Andean culture, e. g., those in Central America, where, however, they are exogamous and unilateral (matrilineal).

[5] The *Chibchan* tribes with an Andean culture living in the Colombian Highlands and the Cauca Valley attached great importance to the preservation of mummies, which they often carried into battle, but it is not known whether these mummies were the bodies of the founders of clans.

In spite of frequent statements that Andean tribes claimed descent from mountains, especially volcanoes, and from rocks, lakes, and the like, these tribes actually believed only that their ancestors, definitely human, had come down from mountains, out of caves or lakes, and the like. This legendary "descent" of the clan founders gave a semidivine status to some of their descendants, especially to the clan heads and, in lesser degree, to the noblemen most closely related to the main line.

While it is nowhere definitely stated that noblemen and commoners were members of the same clans, circumstantial evidence makes it likely that this was the case; in other words, there were no clans composed exclusively of one or the other, except for the royal clans and possibly all the (noble) Inca clans of Cuzco. Shortly after the foundation of a new clan, it may have consisted mainly or even exclusively of noblemen, but this must have constituted only a transitional situation. With the growth of the clan an ever larger number of its members became so far removed from the direct line of its founder that they no longer were considered noble. Not only was each clan internally stratified, but the various clans and the two moieties had different standings, resulting in a rather complex structure. Clans and members of clans had different ranks, and these ranks were based on descent. It was a social stratification based on kinship. Throughout the Andean area noblemen and commoners, even though belonging to the same clan, married only within their own rank. In the *Inca* Empire, such marriage was required by a definite rule.

Although marriage within the clan was characteristic of commoners, noblemen often did not find within their clan a suitable spouse, i. e., one whose social status at least equaled their own. Consequently, as often as not, they seem to have married noblewomen of other clans. Among the rulers however (our data refer exclusively to the rulers of the *Inca* tribe), we find the very opposite tendency. Although for political reasons some rulers married the daughters of chiefs of other tribes, some of our best-informed sources claim that such marriages were contracted only when the rulers had no full sisters of their own. There is no doubt that a great number of rulers married their sisters by their own father and mother. Although all sources claim that clan-membership among the *Inca* was established exclusively through the male line, brother-sister marriage demonstrates that in the case of some of the noblemen, at least the rulers, the maternal line also was considered, for it was thought that the children of parents who were brother and sister had the most noble descent. The importance of women in reckoning descent also is shown by the preservation of the mummified bodies of the wives, i. e., usually the sisters, of the rulers. Their names, moreover, were always remembered along with those of their husbands.

For the majority of the Andean peoples, we have no information as to how clans were founded. A specific case, reported only for the times of the *Inca* Empire, may or may not be representative of Andean clans in general. The *Inca* rulers gave land to distinguished individuals and their descendants, who thus formed a new clan living on the undivided land of the original grant. For themselves, they followed a different procedure: every ruler and his sons (except the oldest) and his sons' descendants formed a new clan. The oldest son was excluded because he, upon his accession to the throne, would found a new clan.

The Andean clan functioned as a unit for practically every purpose of life. Its members almost invariably lived together and married one another, and each clan constituted a world apart from other similar units within the tribe. In pre-*Inca* times, before the establishment of the first "Empire," the clans cooperated only in certain situations and for specific purposes, about which, however, we have unfortunately only the scantiest information. Each clan was led by a chief, always a man, who had to be its most noble member, i. e., the most direct descendant of the semidivine founder of the clan. It seems that the head of the most noble clan within the tribe was the head of the tribe as a whole.

If some of the differences in the manner of appointment of tribal chiefs by the *Inca* rulers may be interpreted as a partial survival of earlier tribal customs, it would seem that, at least in some parts of Perú, the heads of lower units (clans) might attain leadership of the higher units (tribes).

Succession and inheritance among the peoples of the Peruvian and Bolivian Highlands followed the male line, i. e., it passed to brothers or sons. For the Peruvian Coast, we have no data on inheritance but succession followed the female line, i. e., went to brothers or to sisters' sons. Among the *Muisca*, a man's property went to his sons, but succession went to his sisters' sons.

An outstanding aspect of Andean society, best described for the *Inca* Empire, is the wide gulf which separated commoners and nobles. The life of the commoners was extremely uniform, except as local variations reflected aboriginal tribal differences, and it was very simple, the people being so regimented that their individuality had almost no opportunity for self expression. The nobles and the noble members of the clergy, however, lived in great luxury, and, though entirely dependent upon the will and even the whims of the Emperor, they had considerable opportunity to improve their lot through such individual activities as exploits in warfare or the successful execution of a duty. Military exploits were usually of greater importance than such things as the construction of a road or an irrigation project, for in them the elements of luck and of unique opportunities loomed larger and sometimes had far-reaching consequences. It is not surprising, therefore, that in the *Inca* Empire, where wars and conquests were of major importance century after century, more favors were bestowed upon great soldiers than upon great engineers, and that the decendants of successful war leaders often amassed a considerable fortune and acquired an importance which sooner or later threatened the social stability.

Rewards bestowed upon successful or faithful noblemen consisted either of such privileges as those mentioned above or of objects such as jewels, garments, land, domesticated animals, and women. Quantitative differences, e. g., in land grants or gifts of domestic animals, were quite considerable, extremes ranging from 5 or 10 to 1,000 units (Santillán, 1879).

An important fact of Andean society was the tremendous disproportion between the total number of noblemen, including noble clergymen, and the commoners. In spite of their impressive absolute numbers, the nobles constituted but a minute fraction of the whole population.

Few data are available to throw light on the important question of whether a commoner might become a noble. If the interpretation of the Andean clan which we have given is correct, some noblemen would, in the course of time, lose their noble status and slide down into the vast mass of commoners, who theoretically were all distant relatives of the noblemen of their clans and, like them, descendants of noble ancestors. While this process of degradation would seem inherent in the very nature of the Andean clan, the opposite process, that is the elevation of a commoner to the status of noblemen, could not be accomplished merely by factors of the kinship structure, but required a special act by the leading element or elements among the noblemen themselves. As yet, there are no data which indicate that the status of a commoner was ever raised artificially to that of a noble. There is evidence, however, of the beginnings of social differentiation within the group of commoners. There is occasional reference to clan members who were unusually wealthy, even though, according to quite explicit statements in our sources, they had no property in land. The superior economic status of such persons was indicated by the comparatively small amount of time they spent in working the piece of land allotted them each year, and it seems to have derived, at least in part, from their possession of domesticated animals which were distributed to clan members who had participated in certain military campaigns—two head per warrior, according to Santillán. In contrast to such persons, there was in Cuzco and possibly in other important centers of population, a group of poor people. It was sufficiently big and permanent to be mentioned by several sources. It seems that these poor were elements which for one reason or other had lost their connection with their clans. It is not known whether the rather considerable number of prostitutes so prominent in some of the popular festivals held in Cuzco was recruited from this group of déclassés.

While the stratum of comparatively wealthy members within the clans is obviously of greater importance to our problem than the presence of a group of poor in some or all of the bigger settlements, actually, no data are available to show whether this upper layer was sufficiently strong numerically to threaten the clan structure. It is, however, of interest to note that the noblemen of lowest rank seem to have been little better off economically than the more wealthy commoners. The figures given for the distribution of domestic animals among the participants in a military campaign, while showing an enormous gulf between the most and the least favored nobles (5 or 10 and 1,000 head), bring the most humble noblemen quite close to the commoners, who received 2 head each.

**Yanacona.**—One of the most interesting social groups in Perú was the yanacona. A definition of their social status is not easy. Trimborn represents them as slaves, who, as a result of their personal relation to their owners, rose to certain rather important positions. Trimborn enumerates four social groups from which yanacona came: prisoners of war, certain criminals deprived of personal liberty, commoners selected by the ruler or his representatives, and children of yanaconas. For each case, he either fails to give his source or utilizes only part of the data it contains. The sources actually tell the opposite story. Santillán (1879), one of our best sources, and the one most used by Trimborn (although in an arbitrary selection), states very clearly that the majority of yanaconas were chosen from the sons of curacas.

The yanaconas served in many capacities: bodyguards or pages of the rulers or of curacas, administrators of the landholdings of living or dead rulers (in the latter case their descendants formed part of the "familia" of the dead ruler in the Roman sense of the word), administrators of landholdings of the Temple of the Sun, supervisors of storehouses, assistants to *Inca* administrators, engineers, and others.

The relations between the yanaconas and their masters were in most cases very intimate. They were shown many favors, given land, presented acllas as wives, and sometimes even made curacas.

The yanaconas did not come under the jurisdiction of curacas, because from the moment they were made yanaconas they lost all contact with the ayllu they had belonged to and became a part of a new social group which stood outside the basic clan structure of Andean society.

## AGE GROUPS

Combined with this structure based on common descent and social stratification was a division according to age, which, however, seems to have applied only to the commoners. These divisions differed in detail in different parts of the *Inca* Empire, but they were probably local variants of a more generalized Andean, or at least Peruvian, system of age grades. In Pacaxe Province inhabited by *Aymara*, for instance, the following age groups were recognized: From 5 to 10 years, 10 to 20, 20 to 25, 25 to 30, 30 to 50, and over 50. Those of the Chincha Valley were: 1 to 4 months, 4 to 8 months, 8 months to 1 year, 1 to 2 years, 2 to 4, 4 to 6, 8 to 10, 12 to 16, 16 to 20, 25 to 40, 50 to 60, and 60 and over. Whereas the age groups from Pacaxe Province are multiples of 5, those from Chincha seem to be based on the number 4; also, in the last list there are several inconsistencies; years are missing which may, however, be at least partially added from a list given by Santillán, reading as follows: Up to 2 years, 2 to 4, 4 to 6, 6 to 8, 8 to 16, 16 to 20, 20 to 25, 25 to 50, 50 to 60, 60 and over. All these lists seem to refer to the male population only. There existed similar age groups for women, as can be seen from marriage data, but no details are known.

During the *Inca* Empire and probably earlier, each group above a well defined certain age had definite community social and economic duties and functions. Thus, in Pacaxe Province, boys from 5 to 10 years had only duties of an educational rather than immediately useful character, those from 10 to 20 years hunted birds, those from 20 to 25 cleaned roads and fields of stones and built the agricultural terraces; those from 25 to 30 labored on public works; those from 30 to 50 served as soldiers; and those above 50 labored in the fields. According to Santillán, boys from 16 to 25 helped their older relatives in such chores as carrying loads; men between 25 and 30 years worked in the fields, carried the tribute to Cuzco, and served as soldiers; men from 50 to 60 worked in coca, pepper, and other vegetable gardens; and those over 60 served as councellors to the chiefs.

Among women, age groups were much less important than the division into those who were selected (aclla) to be educated in convents and later became the wives or concubines of noblemen and those who were rejected (guasipa). Prior to marriage, the latter lived more under the tutelage of the curaca than of their parents.

### NUMERICALLY PATTERNED GROUPINGS

Cuzco, the *Inca* capital, and the *Inca* Empire as a whole, furnish an opportunity for studying the combination of several numerically patterned groupings which very well may be of different origin and age. We find the following four groupings:

(1) A division into two moieties, Hanan Cuzco ("Upper Cuzco") and Hurin Cuzco ("Lower Cuzco"), the former considered as of higher standing than the latter. According to one tradition, the division was made at the very beginning, the Hanan Cuzco moiety consisting of those local inhabitants whom Manco Capac brought together with his own followers, and the second of those his sister-wife gathered in a similar way. Acosta's version of the tradition makes Manco Capac the founder of both moieties. According to still another tradition, Cuzco was divided into moieties only by the ninth ruler, who grouped into two moieties the clans that had been previously founded, one by each ruler. Each moiety was to have had 5 clans; i. e., provision was made for clans not yet founded that would bring the total to 10. As a matter of fact, several sources state or imply that the first five rulers and the clans they founded belonged to the Hurin Cuzco moiety, which at the time of the Conquest had lower standing, and the following five to the Hanan Cuzco moiety, which had higher standing. No source discusses the question of the moiety affiliation of the eleventh ruler, whom the Spaniards found on the throne, and none reveals how power was transferred from Hurin to Hanan Cuzco; as a matter of fact, all sources state that the sixth ruler, who was the first of Hanan Cuzco, was the oldest son of the fifth ruler, who was the last Hurin Cuzco ruler.

The Spaniards found that the division into two moieties existed throughout the *Inca* Empire, though it seems to have been totally unknown in the remainder of the Andean region, e. g., among the *Chibchan Muisca*. The usual moiety names were Hanan Saya and Hurin Saya, but in many cases when these names were recorded the name of the tribe (or "province") took the place of "saya," e. g., Hanan-Rucana and Hurin-Rucana. It is curious that, with one exception, both *Inca* and non-*Inca* informants throughout the Empire believed this dual division was first introduced by the *Inca* conquerors.

(2) A division into 10 clans, each founded by one of the successive rulers and equally divided between the 2 moieties. The clans inhabited separate sections (barrios) of Cuzco, but the barrio names differed from the clan names. Some sources claim that the *Inca* introduced this division into 10 clans into the territories they conquered, and that they also introduced the dual divisions with 5 clans in each moiety. At the time of the Conquest, 10 clans formed part of a larger

unit throughout the Empire, but unfortunately we have no evidence from anywhere but Cuzco that each moiety was actually composed of 5 clans. None of the names of the 10 *Inca* clans in Cuzco is mentioned for other parts of the Empire. On the other hand, it is significant that, according to several sources which may, however, refer only to special parts of the Empire, all groups composed of 10 units (individuals, families, or clans, or 10's or 100's of clans) were divided into equal halves, so that we have a series of 5, 10, 50, 100, 500, 1,000, 5,000, and 10,000. This series suggests that not only 10 clans were divided in half, 5 in each moiety, but that all larger units were also divided in 2, but sources are far from clear on this point. In some cases, they give the impression that the territory of a whole tribe ("province") was divided in halves, and that a certain number of clans lived in each half. In others, it seems that the dual division ran through every settlement, which may or may not have consisted of several clans, e. g., the *Aymara* Pacaxe Province. Possibly, the two situations coexisted, an entire province being divided into an "upper" and "lower" moiety and each individual settlement also being similarly divided, if it consisted of several, perhaps 10, clans. Or, there may have been a division of the province as a whole and also of its territorial subdivisions, each of them consisting of several one-clan settlements.

Curiously, in the local sources which refer to certain parts of the Empire, e. g., the province of the Rucana, the moieties (Hanan-Rucana and Hurin-Rucana) themselves are called "ayllus," without any indication of their being further subdivided.

(3) A division into four quarters (suyu) characterized the Empire as a whole rather than Cuzco, the capital, although the four roads leading to each of the four sections radiated from the heart of Cuzco. An analysis of several ceremonies and of the distribution of duties connected with the care of sanctuaries shows that two of these suyus, Conti-suyu and Colla-suyu, stood in a special relation to the Hurin Cuzco moiety and that the other two suyus, Anti-suyu and Chincha-suyu, had a similar relation to the Hanan Cuzco moiety. In each moiety, two of the five clans stood in a special relationship to one of the suyus and three to the other. The two clans founded by the first two rulers[6] stood in a special relationship to Conti-suyu, whence according to Pedro Pizarro, the *Inca* tribe originally came. The next three clans were similarly related to Colla-suyu, where the series of *Inca* conquests began. Curiously, the sixth clan, i. e., the first of the Hanan Cuzco moiety, was connected not with Anti-suyu but with Chincha-suyu, the same as the ninth and tenth, whereas the seventh and eighth were related to Anti-suyu. This abnormality, the only one

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[6] Actually we know this only of the first clan, but on the basis of circumstantial evidence we may include the second.

in an otherwise perfectly consistent situation, may, either in reality or by tradition, have resulted from a shift of the sixth clan from the third to the fourth suyu. Thus, we may postulate that prior to the recent situation, when two, three, two, and three clans respectively correspond to each of the four suyus, there was an earlier time when the grouping was two, three, three, two.

Although *Inca* tradition held that the divisions both of 2 moieties and of 10 clans were their own creation (actually such divisions conform to the quinary-decimal numeral system found throughout the whole Empire), the division into the 4 suyus is attributed not to the *Inca* but to the *Aymara*. Four seems also to have been basic among certain Coastal tribes, e. g., the inhabitants of the Chincha Valley (see Age Groups).

(4) A division of the area immediately surrounding the capital into groups of three "seques," or sections, with a certain number of sacred places, each in the care of a certain clan. The three were called Callao (Cayao), Payan, and Collana (Coyana), and they always followed each other in the same order. The seques were in turn grouped in sets of three, and nine seques ideally corresponded to each of the four suyus (actually only to three; see below). In 4 cases out of 42, the place of 1 of the 3 seques was taken by 1 of another name, and in 3 cases, the name was that of a clan-village in the outskirts of Cuzco, while the fourth bore the honorific title "Capac." Although the grouping of three seques in sets of three within each suyu was undoubtedly basic, it was not strictly followed in Conti-suyu, to which the oldest *Inca* clans belonged. Here we find four sets of three, plus three not grouped into a set, the total number being, nevertheless, a multiple of three.

Although our sources on the seques in the Cuzco district (mainly Ondegardo and Cobo) give no hint that these seques were or originally had been clans, only three clans ("ayllus") are mentioned in the *Aymara* Province of Collagua and these bore the very same names as the seques of the Cuzco district, and they had the same order.[8] Our source on this province (Ulloa Mogollón, 1885) does not mention the moieties, which loom so large in the reports of the social organization of other areas of the *Inca* Period.

Moreover, these three clans of the Collagus Province are said to have been composed of 300 Indians (probably families) each. There can be no doubt that we are dealing here with a type of social organization based on a threefold division (3×300; 3×3).

It would be interesting to speculate on the different historical

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[8] Actually, the three names, the second of which is spelled "Pasana" instead of "Payan," are enumerated in reverse order as in Cobo's list (1890–93) of the seques corresponding to one of the suyus. (See p. 304.)

TABLE 1.—*Correspondences between moieties, suyus, ayllus, and seques*[1]

| Hurin Cuzco moiety | | | | Hanan Cuzco moiety | | | |
|---|---|---|---|---|---|---|---|
| Conti-Suyu[2] | | Colla-Suyu | | Anti-Suyu[3] | | Chincha-Suyu | |
| Seque | Ayllu | Seque | Ayllu | Seque | Ayllu | Seque | Ayllu |
| | Anaguarque | | | | | | |
| Callao | Quisco[4] | Callao | Aquiniaulla | Callao | Cari | Callao | Goaca and Taqui. |
| Payan | | Payan | Haguayin[5] (3d Inca) | | Ayamarca | Payan | Vicaquirao[6] (6th Inca). |
| Collana | | Collana | | | Yacamora | Collana | |
| Callao | China Penaca (1st Inca) | Callao | Apumayta (4th Inca) | Callao | | Callao | Andasaya. |
| Payan | | Payan | | Payan | | Payan | Iñaca Panaca (9th Inca). |
| Collana | | Collana | | Collana | Auacailli[7] Panaca (7th Inca) | Collana | |
| Callao and Collana | | | | | | | |
| Callao | | Callao | Uscamayta (5th Inca) | Callao | | Callao | Capac Ayllu (10th Inca). |
| Payan | | Payan | | Payan | | Payan | |
| Collana | | Collana | | Collana | Çubçu[8] Panaca (8th Inca) | | Capac. |
| Callao | | | | | | | |
| Payan | | | | | | | |
| Collana | | | | | | | |
| 4×3+1+2=15 | | 3×3=9 | | 3×3=9 | | 3×3=9 | |

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[1] Basically according to Cobo.
[2] "Where the Inkas came from" (P. Pizarro).
[3] Cobo (1893) gives the data in inverse order on this suyu.
[4] Or Quesco.
[5] Or Yahuaguin, or Ahucani.
[6] Or Yuicaquirao chanincuzco.
[7] Or Aucaylli or Aocailli.
[8] Or Cuzco or Cocco, or Xoczo or Enecu.

origins of these four types of social groupings in the *Inca* Empire: 2 moieties, 3 clans and seques, 4 quarters, and 2×5 clans. As stated before, *Inca* tradition claims the groupings based on 2, 5, and 10 as their own contribution, which we may reinterpret as their own original tribal characteristic. A number of traditions of non-*Inca* origin and certain other data (see the age groups based on the number four in the Chincha Valley, p. 300) suggest that fourfold divisions came either from the *Aymara* region or from the Coast. (Cf. also below the discussion of the significance of the traditions regarding the origin and arrival in the Cuzco area of the forefathers of the *Inca*.) The social division based on three may also go back to the *Aymara* (see below), but there are also indications that such a division existed among the tribes whom the *Inca* conquered in the Cuzco area, for survivals of it were encountered by the Spaniards. (Cf. investigation of complaints carried out by Toledo.)

Whatever the historical origin of these four types of social groupings may be, the numbers on which they are based were of great practical importance not only in the social structure of the Empire but also in a number of institutions and customs. Thus, the governor's visits took place each third year. A great number of rituals continuously emphasized the importance of these social groupings based on 2, 3, 4, 5, and 10. The moities were seated separately on all occasions, and the Hanan moiety always took precedence over the Hurin moiety. At a certain festival, they engaged in a ritual sham battle. The threefold groupings of the three seques was, at least in the Cuzco region, in itself of religious nature. The fourfold division of the Empire, with Cuzco as its center, was dramatized every year at the citua ceremony.

A few traditions mention an original group of *Inca* consisting of only three brothers and three sisters, who were their wives, but there seems to be no doubt that they are simply mutilated versions of a basic tradition referring to four pairs of brothers and sisters. In some versions, these couples start their career near Cuzco, where they were supposed to have emerged from a cave, but in others they come from Tihuanaco in *Aymara* country. There are, in fact, traditions in that country, which speak of four forefathers (it is not clear if they are supposed to be brothers) who became the lords of four great regions, thus foreshadowing the later fourfold division of the *Inca* Empire.

## EMPIRE ORGANIZATION AND CONQUEST

The Spaniards found that the whole Andean region was characterized by the submission of some people to others. Cases of tribes living independently without being under foreign rule or ruling over foreign tribes were definitely an exception. In contrast with the situation in México, where the actual incorporation of alien tribes into a single administrative whole had progressed but little and most conquered peoples were only forced to pay tribute, in most of the Andean region conquest took a much more solid form and led to the formation of true empires.

In the southern part of the Highlands and on at least part of the Peruvian Coast, empires resulting from such conquests embraced large territories, but in the north, along the Ecuadorian Coast, in the Ecuadorian and Colombian Highlands, and in the Cauca Valley the number of tribes thus united was still rather small. The largest of the empires, that of the *Inca*, had however come into existence only a few centuries before the arrival of the Europeans.

**Origin of the Inca Empire.**—Although practically nothing is known of the organization of earlier empires, which rivaled that of the *Inca* and were finally incorporated into it, *Inca* tradition fortunately records the history of the foundation of their empire. It relates that in the conquest of the Cuzco region, the heart of the future empire, the *Inca* clans increased their strength by a number of methods which, though never completely abandoned, were not typical of the later stages. They established friendly relations with local clans or tribes by marriage with their leaders and by offering them protection and land so as to attract them to the new settlement.

Unfortunately, little is known regarding the role of these incorporated tribes or clans in the new social structure. A careful analysis of all relevant data may shed new light on this interesting problem. As has been pointed out previously, it is quite possible that a number of structural features of recent social organization came, at least in part, from the influence of these tribes. It is of interest that some of these clans had important functions not only within the empire as a whole, but even in direct relationship to the ruling tribe. For example, the clan called terpuntai provided all the Sun priests except the Pontifex maximus. It is even possible that the *Inca* considered some of these clans or tribes to be their close relatives and therefore entitled to an important place in social life. Some of the tribes living close to Cuzco even wore earplugs very similar to those of the *Inca* Orejones ("large ears").

In the remainder of the area which they conquered, the *Inca* naturally dealt somewhat differently with each conquered tribe. Treatment of it depended on whether it had had to be conquered by warfare or had surrendered peacefully and on other factors, such as its supposed religious or magical power.

Most authors, including both early chroniclers and recent theoretical students, have dealt mainly with the organization of the areas conquered. All early sources stress not only the thoroughness of the conquerors in applying administrative measures of their own, but their extraordinary subtleness and skill in exploiting to the fullest degree all preexisting structures and institutions of the subjugated people. Fortunately, the historical traditions regarding the achievements of every ruler make it possible to follow the evolution of the methods of conquest and reorganization of newly conquered territories. There is some difference of opinion regarding important features of conquests and new administrative techniques, but closer investigation may reveal that these differences are evidences of shifts of procedure, discussed previously, during the period from the origin of the Hurin-Cuzco moiety to that of the Hanan-Cuzco moiety. Various traditions claim certain special achievements for their respective moieties.

A number of sources of local character, many of them published by Marco Jiménez de la Espada in his three-volume collection of the "Relaciones geográficas de Indias" (1881–97), shed much light on a number of phases of the conquest by the *Inca* and on the first steps taken to incorporate the new territories into their empire structure.

Bram (1941, pp. 41–44) has very ably summarized the most outstanding changes brought about in the social life of the tribes that became incorporated into the *Inca* Empire:

> Previous to the conquest and incorporation of an ayllu or a group of ayllus into the Empire, the Indians lived in a small and circumscribed political, social, economic, linguistic, and religious world.
>
> Politically, the native owed allegience to an sinchi or a curaca whom, in most cases, he knew personally and who was not a stranger to his group. When his settlement was in danger and he had to defend it, the nature of such a war was obvious to him. He fought in a familiar environment and for his own cause.
>
> Social relationships within an ayllu were those of an almost unstratified community with collective landownership. The curaca and his family formed the only nobility, while the mass of commoners were all equals. The possibilities of economic and social advancement were practically nonexistent, and this must have insured a considerable degree of stability in interpersonal relations.
>
> Economically, a village community was a self-supporting unit, which engaged in a moderate amount of barter with neighbors. The curaca was exempt from labor in the fields, but it must have been relatively simple for a middle-sized community to support him and his family.
>
> The multiplicity of linguistic stocks in the Andean area limited the natives to associations with related groups or tribes.
>
> This was even more the case in their religion. Most ayllus limited their cult to their own tutelary and totemic supernatural beings, and only occasionally displayed some interest in the cult of the neighboring ayllus.
>
> When a native community was incorporated into the *Inca* Empire, the Indian passed from membership in a more or less democratic village community to complete subjection to a distant and terrible alien master. Occasionally, a representative of this ruler visited the settlement in order to converse, in a strange language, with the curaca and issue orders.
>
> While intergroup wars between the ayllus ceased with the arrival of the

> Incas, men from the villages were drafted now for wars in distant lands and for unknown causes. This was a kind of war that differed from the familiar and traditional fighting that took place among neighbors for lands and water sources.
>
> With the Inca invasions arose new social groups. Selected girls were taken away from their families and brought up in the "Houses of the Chosen Women." There they lived in seclusion and formed a group by themselves. Eventually, they married into nobility or became priestesses of the Cult of the Sun. A certain number of men were drafted as servants; they formed the class of semislaves called "yanacuna" . . . Skillful artisans and craftsmen were delivered by their curacas to the court of the Inca in Cuzco, where they remained part of their lives. Soldiers returning from distant lands had broadened their horizons through new experiences. If they had been rewarded for bravery, they acquired greater prestige in their native community. In one word, it was a new social world, with an intensified horizontal and vertical social mobility.
>
> . . . the Incas divided the land of the conquered natives into three parts, the products of which were reserved for the Inca, the Cult of the Sun, and the community itself . . . In bad years, the natives could exist on the supplies stored in the granaries of the Inca and of the Sun.
>
> Men were drafted to work in the mines, to participate in royal hunts, to work on the construction of fortresses and other buildings, to tend the llama flocks of the Inca, and for many other tasks noncommunal in scope.
>
> The ayllus remained self-supporting just as they used to be, but over and above their needs, they had to produce for the state and for its numerous institutions.
>
> The introduction of the official Quechua language transformed the parochial native into a citizen of an Empire. . . .
>
> The annexation of a province was usually followed by the erection of a temple to the Sun and the forced introduction of the rites of the Inca religion. However, local ayllu divinities were not abolished. [Bram, 1941, pp. 41–44.]

## THE CHURCH

Perú offers an opportunity for the study of a situation which possibly more than any other, sets off Andean society from the rest of native South America—the Church.

At the time of the Spanish Conquest, the Church was still of such importance that the tribute fields, the produce of which was destined for the temples and convents, were worked first. In earlier times, up to the eighth *Inca* Emperor, the position of the church must have been very much stronger. Under the seventh ruler, in fact, the priests seem to have made an attempt to gain complete control of the State, but they were defeated and their power and social position curtailed in many important respects. Prior to this reform, priests of all categories seem to have been noblemen; they held hereditary position, certain clans were mainly identified with religious affairs, and the Pontifex Maximus is said to have had power over the *Inca* ruler. The priests had much more property and the right to more tributes than in later days.

After the reform, only the lowest rank of the priesthood was hereditary, and even this was occasionally elective. Most ranks, especially the most important higher positions, were filled through election by an assembly of priests in which representatives of the Emperor participated. Even after the reform, however, the Emperor could not appoint priests, although he usually managed to have one of his nearest relatives, often a brother, elected to the post of Pontifex Maximus. Another important reform was the admission of commoners to the lower ranks of the priesthood, and the institution of female confessors for women, men having previously confessed both sexes.

In later times, there was the following hierarchy of priests. The Pontifex Maximus (villca humu) presided over a supreme council of 9 (or, somewhat doubtfully, 10) hatun villca. Each hatun villca was in charge of a large area and of a group of priests called yana villca. The incumbents of each of these posts had life tenure but were not allowed to marry. Cieza de León, however, an usually well-informed and trustworthy author, claims that the Pontifex Maximus was married. The extraordinary power of the Pontifex Maximus and of the priesthood as a whole, especially its highest ranks, is illustrated by a number of facts. The Pontifex Maximus appointed bards who composed official songs, describing his own deeds as well as those of each *Inca* ruler. The whole clergy was exempt from all administrative measures, such as tributes, military service, and public works, and from ordinary law, thus occupying a place equal to the nobles (Orejones).

Below the group of priests just described, were the Huatuc, that is, the seers and confessors, and below them, forming the lowest rank, the Humu or Nacac, who did the menial work. Members of these last two groups held office only for a limited time, during which they were not allowed to marry. The confessors of the Virgins of the Sun had to be eunuchs or else take a vow of perpetual chastity. Lowest in rank and below these priestly groups were married servants and slaves. The married servants slept in their respective houses whenever off duty, but all unmarried priests, from the Yana Villca to the Humu or Nacac, lived in a special quarter of the town close to the temple.

Like the lay population, the clergy was divided in groups of 10, 50, 100, 500, and 1,000.

Economically, the priests depended upon tribute (in some cases whole villages paid tribute exclusively to certain temples) and upon the work of the wives of the servants who lived in the temples.

The villca humu and the hatun villca, like the civil authorities, had a staff of inspectors, who in turn were watched by secret agents. Priests who violated rules were temporarily or permanently removed from office and condemned to menial work in temples or to forced labor in mines (belonging to the church?), or in some cases, were handed over to the *Inca* Emperor's legal machine.

In addition to these three groups of priests there were monks and nuns. The majority of monks were eunuchs (corasca), and one of their principal tasks was to take charge of the convents of nuns (aclla).

Pachacuti (1879, 1927) mentions four classes of nuns: yurac aclla, those reserved for the Sun (i. e., women who could never marry); vayru aclla, those designated to become the wives or rather concubines of the rulers (apparently they were chosen from his closest relatives); paco aclla, those whom the ruler gave as wives to curacas; and yana aclla, those who worked for the acllas of the first three groups as servants, and were later to be given to commoners. Acllas were divided in groups of 10, 50, 100, etc., like priests and civilians. The acllas of the first three groups were of noble origin; those of the last, commoners.

In addition to these four groups of nuns, most convents had daughters of noble families who were reared there but were not considered acllas. They were under a different superior from that in charge of the whole convent. The mother superior of the convent in Cuzco, which at the coming of the Spaniards had 3,000 inmates, was often a member of the ruling family, for instance, a sister or daughter of the Emperor.

A special official visited the provinces to select the acllas from among young girls of 8 to 9 years old. He first sent them to the convent of the province and later to the central convent in the capital. While evidence is conflicting, it seems that both the girls and their parents were quite willing that they should become nuns because they might expect economic security and often high social status.

While it is nowhere stated that the official who selected the acllas was a eunuch, certain officials attached to each convent were unquestionably eunuchs, and, it seems, they held higher rank than mothers superior. They were always monks. It is not clear, however, whether the confessors of acllas were monks or belonged to the second group of priests.

The situation of the church in relation to the nobility is an interesting problem in terms not only of the historical conflict discussed above but of the wider problem of the social stratification of Andean society as a whole. As in certain phases of the history of European social institutions, the contrast between noblemen and commoners in Perú was clearly marked and in several places there were even traditions of a separate origin of noblemen and commoners. But in Perú, no less than in Europe, the position of the clergy complicates the picture, since the lowest ranks of the clergy were commoners. The upper ranks were, however, not only noble, but in many cases actually the close relatives (brothers, uncles, sisters, etc.) of noblemen in civil or military positions.

The noblemen in civil or military positions were, however, sharply distinguished from those in religious positions. Individuals continuously crossed the boundary from one to the other category, but the two groups stood clearly apart. Within Andean society as a whole, just as in European society, lay noblemen and the upper ranks of clergymen were subdivisions of a larger group, which was distinguished from the commoners.

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# SOCIAL AND POLITICAL ORGANIZATION OF THE TROPICAL FOREST AND MARGINAL TRIBES

By Robert H. Lowie

South America, though as yet largely unexplored in point of social structure and usage, has during the last decade or two revealed a surprising range of phenomena, thanks both to intensive field research and a scrutiny of old sources by trained ethnologists. The present article will summarize the essential findings bearing on the institutions of marriage and the family; kinship usages and terminology; moieties, clans, and bands; associations; government and law. It is obvious that these topics are often intimately connected and must be kept distinct solely from the needs of exposition. Moreover, any distributional statement should be taken with the reservation that large sections of the continent remain imperfectly known.

## MARRIAGE AND THE FAMILY

This topic may be conveniently split up into a variety of heads, such as attitudes toward extramarital intercourse; the institutional number of spouses; conditions for entering wedlock; tabooed, favored, and prescribed partners; mode of residence; and relations, sentimental and economic, between particular members of the family.

**Extramarital relations.**—Premarital license, with due regard to prohibited degrees, is carried to great lengths among the Chaco tribes, the Barama, *Carib*, *Palicur*, and doubtless many other groups. On the other hand, the *Sherente* are singularly prudish: mothers or aunts zealously guard the young girls, who thus have few opportunities for mingling with the other sex; and any youth who indulges in premarital relations is at once expelled from the bachelors' hut, a very real penalty from the native point of view. *Apinayé* girls, too, were expected to enter wedlock as virgins.

The *Timbira* and *Sherente* recognize a distinct class of females who loosely consort with a variety of men. These "wantons," though inferior in prestige to virtuous tribeswomen, are in no sense outcasts.

Premarital license is consistent with great strictness in wedlock, as noted for the Rio Negro region. Even in the Chaco area *Chorotí* wives are said to be generally faithful to their husbands, though the reverse does not hold true.

As for adultery, the attitude toward it varies regionally. Usually a husband's lapses are treated as venial by public opinion, but a *Sherente* wife is likely to take vigorous action against her husband or her rival. An offending wife of this tribe is beaten, ejected, and loses custody of her children; her paramour is challenged to a duel with old-fashioned weapons, such as clubs.

**Plural marriage.**—Polygamy is less frequent than in Africa; and where it occurs it is usually more restricted. In most cases the number of wives rarely exceeds three, and only a chief or a distinguished man has more than one. Sometimes, as among the *Sherente*, a second wife must be the first wife's sister (sororal polygyny). Nevertheless, the institution locally assumes more ambitious forms. Guiana and *Jívaro* Indians sometimes have 5 wives or more, and one *Jívaro* is credited with 11. In this tribe the practice of head hunting reduces the male population so as to render polygyny possible on a comparatively large scale. Explanations for the institution are, however, generally lacking. Thus, given the natural ratio of the sexes, it remains obscure how virtually every *Tamanac* could have been a bigamist. In essentially democratic communities monogamy may be expected as the dominant form of marriage and is so reported, sometimes even as obligatory (*Ica*, *Palicur*, *Chorotí*, *Canella*, *Apinayé*, *Northern Cayapó*, *Ona*, *Yahgan*). The arrangements accompanying polygyny vary. On the Orinoco a *Carib's* wives had each a separate hut and cultivated plot (Gumilla, 1791). A *Tupinamba* might even be married to women in several settlements; otherwise they shared the same section of the house with the husband, the eldest usually ranking the rest. The sources sometimes stress the harmonious relations in such households.

Given matrilocal residence, polygyny requires special adjustment. However, otherwise matrilocal groups often allow the chief and his sons to remain in their native village so that the difficulty disappears wherever plural marriage is the headman's privilege. Failing such restriction, supplementary wives seem to have been paid for and then moved to the house of the first wife's parents (*Macushí*). Sororal polygyny, of course, presents no problem from this point of view.

Polyandry is nowhere a crystallized institution of the Toda or Tibetan order, but occurs sporadically in association with other forms of marriage. It is frequent, though less so than monogamy, among the *Aweicoma* (Henry, 1941). Cases of the fraternal type are reported from the *Yaruro* and the *Tupí-Cawahíb*. Among the *Huanyam* there was in 1915 great paucity of women, which resulted in the customary lending of wives to friends; here even a 6 or 7 year old girl was likely to have a suitor (Nordenskiöld, 1924 b).

**Residence.**—Matrilocalism is very frequent, especially in the Chaco and the Amazon-Orinoco areas. Patrilocal residence predominates mainly in northwestern Brazil, the Andean sphere, and the extreme south. Notwithstanding their general cultural relations, the Chaco Indians contrast in this respect with the Patagonians and Fuegians.

Not all tribes have a fixed rule. Either form is possible among the *Chocó* (Stout, Handbook, vol. 4, p. 273); the *Palicur* theoretically favor an independent household for the new couple, but pending their ability to shift for themselves they stay with either the wife's or the husband's parents, an arrangement that may become permanent. The *Tucuna* type is transitional, for irrespective of ostensibly patrilocal residence, a bride's parents do not permit the groom to take her far away, so that they continue to exert their authority over her. This example suggests that what matters is not under whose roof the newlyweds dwell, but which of the two family groups is able to influence them and their offspring. From this angle a distinction must be drawn between temporary and permanent matrilocal residence, the former usually terminating with the birth of the first child. The *Chané* and Barama *Carib* illustrate the temporary; many Tropical Forest tribes, some *Ge*, and most Chaco groups, the lasting arrangement.

The correlates of the two main residential norms as well as the deviations from the norm are illuminating. *Araucanian* bride purchase goes with patrilocal residence, whereas service for a wife is the concomitant and transparent motive of matrilocalism. It is obviously preferable for a man to remain in his familiar haunts, which fact explains the recurrent trend toward patrilocalism. This may be brought about by compensation in lieu of normal bride-service. Characteristically, it is usually the chief and his heirs that are exempt from the common necessity of leaving the settlement (Guiana); and the *Tupinamba* even allowed lesser men to take their wives home provided they rendered extra services and showered their in-laws with presents. An ingenious device for effecting the same end without running counter to the matrilocal rule is avuncular marriage. A man who marries his sister's daughter need not migrate, since in a generally matrilocal society his niece's and his own native settlement coincide.

A significant byproduct of full-fledged matrilocalism is the prestige it brings to the father of several daughters: their husbands' joint labors raise his economic status and may even confer political power (*Tupinamba*, *Guayakí*).

**Prerequisites to marriage.**—Absolute purchase of the bride seems rare compared to service. Apart from the *Araucanians*, the *Cubeo* and the *Goajiro* make substantial payments, though these are in some measure balanced by a dowry or trousseau. Concerning the *Jívaro* the evidence is flatly contradictory: Karsten reports service and matrilocal residence; Stirling, purchase and patrilocalism. Nor is the *Witoto* situation clear: according to Whiffen, the groom does not work for his parents-in-law and offers only negligible presents, whereas Preuss has it that a young man brings them a load of firewood and a large bag of coca, besides rendering sundry services on subsequent visits.

Aside from the question of residence and compensation, the conditions confronting a prospective couple diverge widely. Infant betrothal was the *Tamanac* fashion, and *Sherente* parents arrange everything during the partners' minority. However, the *Apinayé*, though likewise given to planning their children's future marriage, never force them into a distasteful union. In the Chaco, too, there is great freedom; a *Chorotí* girl may choose whomever she prefers. On the other hand, the suitor may have to establish his competence as a provider (Rio Apáporis Indians, *Aparaí*, Guiana *Arawak*). In Guiana such tests were supplementary to the painful puberty ordeals to which both sexes had to submit before marriage—exposure to ant bites, flogging, and the like. A fair number of tribes combine tests with instruction, vocational or moral, in a formal initiation for both sexes (*Yahgan*) or only for boys (*Ona*, *Timbira*), the festival being a prerequisite to wedlock. *Apinayé* youths who had jointly completed the ceremony nearly all got married on the same day, immediately after the close of their ceremonial.

In some tribes the initiative may be taken by the girl (*Pilagá*) or her kin, as when a nubile girl's parents eagerly court an exceptionally adept *Arecuna* hunter or fisherman to marry their daughter.

**Prohibited and favored unions.**—Local exogamy is strongly pronounced in both matrilocal and patrilocal centers (Guiana; northwestern Brazil; Fuegia). Elsewhere clan or moiety (see below) exogamy may restrict the choice of a mate, relevant rules being strictly interpreted by some of the tribes in question: the *Sherente* insist on adherence even when only extramarital relations are involved, whence the custom of always taking *two* wantons, one from each division, on hunting trips so as to enable all members to satisfy their sexual needs.

Local, clan, and moiety exogamy eliminate various relatives as sex partners. On the score of relationship by blood or marriage there are additional bars. However, these very same kindred or affinities are in other regions the mates preferred above all others, so that a general survey will conveniently embrace prohibited and favored forms of marriage under the same head.

Brother-sister unions are authenticated for the royal family of *Inca* Perú, but statements of their institutional occurrence outside the range of Andean civilization must be treated with skepticism. On the other hand, cousin marriage is both widely forbidden (*Cayapa*, *Timbira*, *Mataco*, *Chorotí*, *Ona*) and widely sanctioned. Though the sources sometimes leave us in doubt whether the positive cases represent mere indifference or a genuine preference, cross-cousin marriage is definitely established as a rather frequent South American institution—more frequent than in North America. Its geographical and linguistic range is indicated by the following incomplete list: *Yaruro*, *Tamanac*, *Cashinawa*, *Jívaro*, *Tupí-Cawahíb*, *Nambicuara*, *Wapishana*, *Pilagá*, *Cubeo*, *Sherente.* Male cross-cousins marry each other's sisters among the *Cubeo*, proving the more common symmetrical type of union. However, the *Yaruro* prohibit patrilateral cross-cousin marriage, which is the only form permitted by the *Sherente.* Interestingly, the latter favor more remote matrilineal kinswomen as wives, e. g., a matrilineal great aunt's daughter's daughter.

Occasional statements about the marriage of parallel cousins (*Tamanac*, *Rucuyen*) are too vague to carry conviction.

Avuncular marriage has already been mentioned in connection with rules of residence. In the classical *Tupinamba* example the husband who settles in his wife's community is exempted from some of his customary obligations if a brother-in-law exercises claims on his sister's daughter. With or without such associated ideas, the institution flourishes among the Barama *Carib*, *Macushí*, *Galibi*, *Tamanac*, *Island Carib*, *Wapishana*, *Jívaro*, *Mundurucú*, *Nambicuara*, and *Tupí-Cawahíb*. Since a maternal uncle would necessarily be of his niece's clan or moiety under a matrilineal system, the custom is possible only either in a patrilineal or a clanless society.

To return to affinal unions, levirate and sororate occur frequently, though not always jointly or with equal potency. A Barama *Carib* woman, e. g., always marries her deceased husband's brother or kinsman, but a widower need not take his sister-in-law to wife, though he often does so. Our sources sometimes represent these customs as obligatory (*Mundurucú*), sometimes as favored (*Tucuna*, *Jívaro*), or even as only permitted (*Botocudo*). That the *Timbira* and *Northern Cayapó* frown on the sororate and levirate is somewhat puzzling; their unilateral organizations would seem to favor the principle of substituting one sibling for another, and their fellow-*Ge*, the *Sherente*, approve the levirate.

Fraternal polyandry and sororal polygyny, conceptually related to levirate and sororate, have already been touched upon. The former has a limited distribution (*Yaruro*, *Tupí-Cawahíb*), while the latter is reported fairly often (e. g., *Tamanac*, *Chama*, *Sherente*, *Bororo*, *Paressí*, *Tupí-Cawahíb*, *Araucanians*, *Ona*, *Yahgan*). The common North American rationalization that sororal polygyny bars disharmony among a man's wives is shared by the *Araucanians.*

Filial widow-inheritance, excluding as in Africa the heir's own mother, is necessarily restricted to polygynous societies. It is reported from the *Tamanac*, *Macushí*, *Galibí* in the north, and from the *Araucanians* in the south.

Nepotic widow-inheritance, supplementing the levirate or independent of it, occurs among the matrilineal *Goajiro*.

A unique statement (Coudreau, 1886–87) indicating that, lacking a brother-in-law, a *Rucuyen* widow will be inherited by her husband's father, calls for reserve. On the other hand, the privignate—a man's marriage with his wife's daughter by a previous marriage—has been credibly ascribed to the same people, to the *Bororo* (Lévi-Strauss, 1936), and the *Ona* (Lothrop, 1928).

From the foregoing it appears that the same people may simultaneously recognize several forms of orthodox marriage. Thus, the *Tamanac* are credited with the levirate, sororate, sororal polygyny, filial widow-inheritance, symmetrical cross-cousin marriage, and avuncular marriage.

In this context may be noted the low correlation between duel divisions and cross-cousin marriage. The latter is lacking among the *Western* and *Eastern Timbira*, but turns up among loosely organized Forest tribes and with the multiple clan system of the *Cubeo*.

**Family attitudes and kinship usages.**—In the present stage of our knowledge we must discuss mainly the crystallized conceptions that fall under this head. The division of labor between spouses is probably the best documented phase of the subject.

As elsewhere, the men of the simpler farming tribes hunt, fish, and make clearings for their wives to cultivate, the women also gathering wild vegetable food. This pattern, however, admits of much variation. To take the *Sherente*, both sexes plant and weed, women harvest tubers for daily use, men bring in the maize crop; the *Ashluslay* also have much collaboration in sowing, weeding, and garnering. Again, the predominantly agricultural *Chané*, where hunting and fishing have dwindled to insignificance, resemble the *Hopi* of Arizona in letting men tend the large maize plantations while women take care of the gardens. Women sometimes catch fish, but as a rule by distinctive techniques, say in baskets (*Ashluslay*) or only in shallow water (*Chané*, *Chiriguano*), whereas their husbands use nets. Women prepare alcoholic beverages (*Yuracare*, *Taulipáng*) and boil food in pots, men broil fish or game on spits and grids (*Yecuana*). The *Yahgan* exhibit a striking case of collaboration: the wife paddles the canoe and secures it, the husband harpoons his quarry from the boat.

As regards crafts, pottery is feminine, carving masculine, but, in contrast to North America, baskets are more frequently made by men (e. g., *Motilón*, *Chané*, *Yuracare*, *Guarayú*, *Chimane*). There are contrary instances (*Cayapa*, *Yahgan*), but Nordenskiöld (1924 b) noted with amazement that *Huanyam* women wove baskets.

The theoretical and actual status of a wife is, of course, inseparable from the tribal ideology and associated social factors. For example, the ejection of an erring wife is possible among the patrilocal *Sherente*, but not in a *Canella* home owned by the wife and her mother. Comparisons are most serviceable between peoples of comparable level or known affinity. Taking the Fuegians, the *Yahgan* woman, who actually participates in the food-quest and is allowed to undergo initiation, is better off than her *Ona* sister, who directly contributes little to the larder and is barred from initiation by a men's society maintained avowedly to keep the other sex in subjection. If we similarly compare two *Ge* groups, the matrilineal, matrilocal *Canella* and *Apinayé* allow the wife an absolute claim to the cultivated plot and to the house irrespective of the husband's part in erecting it; the patrilocal, patrilineal *Sherente*, on the other hand, assign corresponding property rights to the man.

However, in our present ignorance single factors cannot be stressed too much. Thus it is not clear why the same investigator was struck by the submissiveness of *Sherente* and by the arrogant independence of *Palicur* women, who live in an equally patrilineal society and cannot even benefit from consistent matrilocalism.

Notwithstanding usages that from our point of view militate against romantic feelings, there is strong evidence that these are not wanting. Bereaved or deserted *Sherente* spouses have been known to commit suicide. Koch-Grünberg lauds the matrimonial relations of the *Cubeo* and was impressed with the mutual devotion of an inseparable young couple. It is, however, obvious that such companionship hinges on linked sociological features; it cannot occur wherever an adult male is obliged to spend much of his time in a men's club or other organizations (*Bororo*, *Sherente*), let alone where a man's tribal society is primarily concerned with bullying women (*Ona*). The frequent separation of the sexes at meals is also of obvious relevance (*Carib*, *Yuracare*).

As in other continents, the aboriginal craving for offspring reacts on conjugal relations, since a barren wife is likely to be despised (*Taulipáng*, Guiana tribes).

The mystic bond assumed between parents and children is reflected in the strict relations, culminating in the couvade, to which both father and mother submit before and after the delivery in order to safeguard the infant's health. Indeed, among the *Canella* a married woman's lovers as well as her husband all willingly subject themselves to the regulations because of their potential paternity. According to the *Apinayé*, the tie persists and is applied in reverse, so that a mature man will abstain from certain kinds of food lest he thereby injure an ailing mother.

Usually children are well treated, though at puberty they may have to undergo severe trials. Otherwise their preparation for adult life lacks rigorous discipline; a *Taulipáng* lad of about 10 simply goes on hunting or fishing trips with his father, learns to track game, and practices archery with his age-mates. His sister helps their mother in her daily tasks, fetching firewood or water, spinning, and preparing manioc cakes.

The degree of intimacy between parents and children is, like the spouses', affected by sociological correlates. Definite age classes divide children from parents, as they do siblings from one another. From this point of view the distinction between an exclusively bachelors' hall (*Sherente*) and a joint club for men and youths (*Bororo*) is obviously significant.

Grandparents, as well as parents, play their part, rigid rules of residence inevitably throwing into relief the elders of one or the other side of the family. The matrilocal *Apinayé* stress the part of the maternal grandmother, who after acting as midwife and nurse lovingly treasures all possible mementos of a child's infancy in her medicine basket.

The father's brothers rarely assume a significant role. Among the patrilineal *Sherente* one of them gives a boy the girdle and feather symbolic of a bachelor's status, but otherwise even here these relatives are overshadowed by the maternal uncles, notwithstanding native theory that all uncles are equally esteemed.

As avuncular marriage illustrates, altogether peculiar ties may spring from matrilocal residence. Owing to the multiplicity of factors, however, it is often difficult to determine the reason for relevant contrasts between related and apparently in essential respects identical tribes. For instance, the *Canella* have a true avunculate, including a decisive voice accorded to the maternal uncle in marriage arrangements; among the *Apinayé* the mother's brother is still an important figure, but no longer determines his niece's marriage. On the other hand, it is not clear why these tribes differ in the transmission of names: the *Apinayé* consistently transfer these from maternal uncle and aunt to sister's son and daughter, respectively; but the *Canella* follow this scheme only for boys, while girls derive their name from a father's sister, reciprocity being considered vital in the sense that a boy may not take his maternal uncle's name unless the transferrer has a daughter who can receive those of her cousin's mother (who is her father's sister). Nor can the avunculate be regarded as wholly bound up with matrilocal residence, for it is nearly as strong among the patrilocal *Sherente* as among the matrilocal *Timbira.*

A special development appears among the *Goajiro*, where the eldest of the maternal uncles is singled out from the rest. He is entitled to much greater deference than his younger brothers, nephews not being allowed to speak in his presence without his permission. From the nieces he exacts much less formal reverence, but claims the bride-price for all of them and may accept or reject their suitors. Theoretically, the senior maternal uncle leaves all his property to his eldest sister's eldest son. In practice he tries to circumvent the law by giving away as much of his possessions as possible to his sons during his lifetime. This constitutes a suggestive parallel to the conflict between parental love and avuncular legal norms in the *Trobriands* of Indonesia and among the *Tsimshian* of British Columbia.

An unusual phenomenon is the special concern over *Yahgan* newlyweds on the part of the husband's paternal uncle and the wife's maternal aunt, who act as the couple's mentors.

Restrictions on the social relations of a maturing brother and sister are carried so far by the *Yahgan* that they are separated even in a canoe. Among the *Sherente*, they avoid meeting alone outdoors. From about his tenth year on an *Apinayé* male will no longer walk with a sister or a niece; he goes past her if they meet alone outside the village, and takes care not to pass under her when she is seated on the roof or in a tree. The *Nambicuara* do not go to such lengths, but neither siblings nor parallel cousins are expected to joke together or to talk unnecessarily. As a rule such prohibitions do not interfere with a strong sense of solidarity, but among the *Yahgan* the bond is strangely weak even between siblings of the same sex.

There is more evidence on taboos for affinities, which range from the *Island Carib* to the *Yahgan.*

According to a 17th-century source (Bréton *in* Kirchhoff, 1931, p. 138), the newly married Antillean *Carib* who settles among his wife's kin does not speak to his parents-in-law and siblings-in-law and tries not to meet them. The explicit inclusion of the sisters-in-law merits attention, but seems to require confirmation. Less anomalous are the conditions obtaining in Barama *Carib* society: there is a taboo between a man and his parents-in-law, which is particularly stringent between him and his wife's mother. Similarly, a *Yaruro* woman neither speaks to her daughter's husband nor travels with him unaccompanied. Here we are explicitly assured of what we can reasonably assume for comparable observations, viz, that the relationship is one of respect, not hostility: the woman prepares food and pouches for the son-in-law, who receives them via his wife; and he in turn is expected to provide for and protect his mother-in-law. A woman's relations with her husband's parents are reserved, but this is of little practical import since she rarely sees them, a situation paralleled among the Barama *Carib.* On the other hand, the *Arau-*

*canians* taboo social intercourse both between mother-in-law and son-in-law and between father-in-law and daughter-in-law (Guevara Silva, 1913). The *Sherente*, too, emphasize these taboos, whereas the restrictions on a parent-in-law and children-in-law of the same sex are less rigorous. It is all the more remarkable that in the extreme south—among Patagonians (Musters, 1871), *Ona* (Gusinde, 1931), and *Yahgan* (Gusinde, 1937)—the stronger taboo obtains between father-in-law and son-in-law. The reverence due to fathers-in-law is stressed in myths (Gusinde, 1937, pp. 658 ff., 1239, 1269).

The *Nambicuara* recognize a special bond between "brothers-in-law," who play certain games together and demonstratively stress mutual affection. The term actually embraces half of a man's masculine generation-mates—the male cross-cousins, since unions are here mainly of the symmetrical cross-cousin type. Two depleted *Nambicuara* bands have in recent years fused, the men of either group adopting those of the other as their brothers-in-law. This automatically made the wives of one band the "sisters" of the other band's men. Thus, the children in either became proper mates for those in the originally alien group. Lévi-Strauss has indicated the analogy of the feature to ancient *Tupí* usage and to Latin-European compérage. As will be seen presently, some Brazilian natives equate the Portuguese term "compadre" with aboriginal designations for an assumed relationship of a somewhat different connotation.

In addition to the usages prescribed for actual and classificatory kin or affinities, various customs exist which rest on an assumed tie of comradeship.

The *Canella* recognize two radically distinct ties of this order, corresponding to the joking and the respect relationships encountered in other areas. When an initiation festival approaches its completion either two of the youths or either of the two girl auxiliaries and one of the initiates may agree to become each other's kwu′no′. Theoretically indissoluble, the tie loses practical importance by the time the comrades attain middle age. Until then they are boon companions, aid each other whenever possible, but are unrestrained in mutual jesting or conversation and publicly reprove each other without fear of giving umbrage. Two male kwu′no′ may temporarily exchange wives, but only if the women consent. Quite different is the second type of bond, called hapiń for men, pinčwei for women. Ordinarily it develops automatically: the recipients of certain personal names are ipso facto the "friends" of those who bear certain other names. A male and a female "friend" of this category must neither marry nor philander, and unseemly conversation between them is prohibited. But even two males are circumspect, must remain serious in each other's presence, and avoid familiarity; in addressing the other neither is supposed to look at him. Whereas spontaneous assistance is a moral obligation, no hapín must beg of another. Finally, there are reciprocal ceremonial duties, including decoration at festivals and funerals.

Among the *Apinayé* the parents or grandparents of a child about 5 years old select from definite social groups (kiye') a man and a woman who henceforth stand in a special relationship to him. They command the youngster's respect, must never have sexual intercourse with him or her, and have the duty of preparing a decorative outfit for their junior partner. The survivor of the unit thus formed had the privilege of decorating the other's corpse and became his principal heir.

A roughly comparable institution occurs among the *Shipaya*: at a festival two men step before the war god's statue, announce their intentions, and are consecrated by the medicine man, who blows tobacco smoke on them. Henceforth, the two compadres (as they are called by both *Timbira* and *Shipaya* who speak Portuguese) are pledged to mutual aid and respect, which bars indecent conversation between them.

On the upper Xingú friendship may be cemented by an exchange of names, as Von den Steinen (1897, pp. 145, 150) discovered among the *Auetö* and the *Mehinacú*. The *Taulipáng*, *Island Carib*, Guiana *Arawak*, and *Warrau* all share this custom (Koch-Grünberg, 1923 a, 3: 146 f.).

**Kinship terminology.**—Our information on this subject does not warrant a real characterization. A few general statements, however, seem permissible.

As in most primitive societies outside of Polynesia, individuals are generally addressed not by personal names, but by kinship terms; even strangers are put into a plausible category. The previously mentioned wholesale adoption of "brothers-in-law" by two *Nambicuara* bands illustrates the tendency.

All of the four basic types of systems recognized by Kirchhoff and Lowie are represented in the available records. What is known of the *Sirionó* nomenclature indicates a pure Generation type: father, maternal and paternal uncle; mother, maternal and paternal aunt; siblings, parallel and cross-cousins are, respectively, classed together. The rarity of such classification outside of Polynesia is noteworthy.

The Lineal type seems to occur more frequently. However, the separation of the direct line of relatives from more remote kin and the lumping together of collateral relatives irrespective of the maternal or paternal connections characterizes most European nomenclatures, hence some of the reported instances may reflect Caucasian influence. Since even competent observers have often been remiss in investigating this subject, it is also possible that they have failed to inquire into relevant distinctions. Taking recorded lists at their face value, we find this type among the *Arawak* of Northwest Brazil (Koch-Grünberg, 1923 b) and of the Pomeroon (Roth, W. E., 1924) as well as among the *Pilagá* (Métraux, 1937).

The Bifurcate Collateral type is apparently exemplified by the *Sipibo* (Steinen, 1897): there are three separate terms for the males and as many for the females of the first ascending generation; and at least two radically different stems in addition to the word for "son" occur in the first descending generation.

The Bifurcate Merging type, which groups the father's brother with the father, the mother's sister with the mother, distinguishing them, respectively, from the maternal uncle and the paternal aunt, is tolerably well illustrated by the Barama *Carib*, *Nambicuara*, *Canella*, and *Sherente* systems.

Rather frequently a terminology simultaneously exhibits the criteria of more than one type. The *Mataco* are Lineal in the parental generation, but in applying sibling terms to the children of both parents' siblings they go to the opposite extreme of a Generation type. The *Ona* scheme is Lineal in ego's, but Bifurcate Collateral in the next higher generation.

Matrimonial arrangements deeply color a number of systems. This is illustrated by the Barama *Carib*, who apply a single term to a man's female cross-cousin and his sister's daughter; practicing both cross-cousin and avuncular marriage, they simply use one generic term for both groups of marriageable females. Similarly, the *Nambicuara* man, who looks forward to marrying one of his female cross-cousins, regards them all as "wives" and their brothers as "brothers-in-law"; father's sisters and mother's brothers logically are treated as identical with the spouses' parents. The *Yaruro* and the *Sherente*, practicing asymmetrical cross-cousin marriage, neatly discriminate between marriageable and prohibited kin of this category.

Such clear-cut correspondences suggest a high correlation between orthodox cross-cousin marriage and the logically derivable nomenclature in South America. Accordingly, it lends support to the hypothesis, even though it does not definitely prove, that cross-cousin marriage may have been even more widely diffused than appears from the records. Thus, the solitary list from the continent offered in Lewis H. Morgan's "Systems" (1870) ascribes to the *Chibcha* a single word for the husband and the father's sister's son. Although cross-cousin marriage is denied for the people of Bogotá and the modern *Ica*, there is evidence for it from Cartago (Joyce, 1912), so that we may at least suspect its occurrence in the vicinity.

Terminological equations raise problems that may yet be satisfactorily settled in the field. Why, as Lévi-Strauss suggests (1936), do the *Bororo* class a woman's elder brother with her maternal uncle unless it is to mark the fact that the son of either kinsman is her proper mate? Here, specific evidence from such marriages is required, for the classification admits of the alternative explanation that the natives merely group together elder male fellow-members of the speaker's moiety.

Other sociological factors also exert an influence. The *Witoto*, emphasizing co-residence in a maloca, put into the cross-cousin category those parallel cousins not born in ego's settlement. This yields the usual result that only the sons of a father's brother, not those of a mother's sister, are reckoned as brothers. The rule of descent likewise plays its part: *Crow* Indian features—identification of father's sister's son with the father and father's sister's daughter with the paternal aunt—turn up among the matrilineal *Canella*, whereas the patrilineal *Sherente* and *Araucanians* present some *Omaha* traits—the use of a single stem for maternal uncle and mother's brother's son and identification of the mother's brother's daughter with the mother.

Since the combined effect of levirate and sororate is similar to that of a unilateral organization, we cannot always be sure as to the probable cause of terminological traits consistent with either. However, since the *Canella* do not practice the levirate, their equation of father and father's brother (not to stress extension to the paternal aunt's son) can be correlated only with the moiety system; on the other hand, the Barama *Carib*, who lack clans but still have actively functioning levirate and sororate, presumably use common stems for the parents and relevant siblings because of these orthodox forms of union.

It must be readily admitted that there are many inconsistencies in the available lists and that an appreciable number of features cannot be interpreted on sociological grounds. However, considering the imperfection of our data, the surprising point is rather the amount of ascertainable correspondence. When the *Canella* differ on crucial points of terminology from nearby fellow-Brazilians but resemble the distant *Hopi*, it is difficult not to connect the differential resemblances with the features associated in both cases, viz, matrilineal descent, matrilocal residence, feminine house ownership.

Irrespective of sociological explanations, a number of traits may be mentioned for their distributional interest. Relative seniority is sometimes emphasized beyond the common distinction of elder and younger siblings. The *Cayapa* distinguish between uncles and aunts according to whether they are older or younger than one's parents, and among the *Chipaya* there are separate words for the father's eldest, second, and youngest brother. The *Yahgan* degrade an uncle younger than one's parents to the cousin category; single out the youngest and the first-born of a group of kin; and sometimes (notwithstanding specific nephew terms) apply a single designation to younger brother, cousin, child, and nephew.

Reciprocal terms reminiscent of the Great Basin and California in North America crop up in the *Araucanian* nomenclature: father's father and son's son (m. sp.); mother's mother and daughter's daughter (w. sp.); mother's father and daughter's son (m. sp.) are united, respectively, under a common term.

Teknonymy is definitely reported for the *Botocudo* (Manizer, 1919), the *Lengua*, the *Tupí* (Anchieta *in* Lévi-Strauss, 1943), and the *Yecuana* (Koch-Grünberg, 1923 b). In all probability it has a much wider distribution.

Comparatively often observers record descriptive designations of kin, as when the *Cayapa* call an uncle younger than one's father "kai-apipi" and a younger sister "kai-in-tsukki" (father, "apa"; sister, "tsukki"). Similarly transparent are Goajiro terms for senior son, "tacon-uaneci-toro"; senior daughter, "tacon-uaneci-ieba"; other sons, "tacon-toro"; other daughters, "tacon-ieba". To what extent such compounds are spontaneously applied in aboriginal speech remains uncertain.

## TYPES OF SOCIAL UNIT

A state organization on a modern pattern can at least be ascribed to the higher Andean civilizations, where it was certainly associated with the more primitive ayllu system still found in the region. However, stratification occurs on simpler levels and will be dealt with under the head of Government and Law. Apart from distinctively political groupings, we must take cognizance of the family, the extended family in Kirchhoff's sense; the patrilineal house community; the patrilineal band as defined by Steward; patrilineal or matrilineal moieties and clans; associations. All of these may at times assume political functions. Associations will be discussed in a later section.

The individual family is probably universal and in some instances figures as the only significant economic and social unit. The *Yahgan*, e. g., exhibit a much weaker sense of kinship for the larger local group bearing a topographical name and only an attenuated sentiment for fellow members of the same dialectic division. Their far more land-minded *Ona* neighbors attach importance to their 39 territorial groups, which approximate Steward's concept of a patrilineal band or Radcliffe-Brown's Australian horde. Since they are emphatically exogamous, they might be classed with the autonomous land-owning "clans" of the *Southern Diegueño* (California) were it not for a doubt as to the inflexibility of the unilateral reckoning. According to our main source, it would appear that even married women did not lose all contact with their native group and that the overwhelming majority of males had a lifelong connection with the hereditary hunting grounds. Nevertheless, men were not precluded from settling in an alien district with the owner's permission; and the precise nature of a female's tie with her native territory is not certain. Hence, the *Ona* system, though hardly definable as "loose," does not quite attain the rigidity of a unilateral organization and may be taken as a borderline case.

The *Witoto* house community, on the other hand, strictly defines the status of its members. Marriage is patrilocal and exogamous, and all those born within the settlement bear the same surname. Here, then, males and females are brought together exactly as in a typical patrilineal clan. The *Yagua* in the same area have similar "clan" malocas.

Definitely unilateral types of aggregation, such as moieties and clans, have a fairly wide but far from preponderant distribution. They are conspicuously lacking in the Chaco and regions southward, with the *Araucanian* case dubious. In a great many populations of intermediate cultural status, such as the Tropical Forest area and coastal Brazil, Kirchhoff's extended family prevails—a residential unit comprising the native blood-kindred of a settlement plus the affinities who dwell with them. Since it does not fix the alinement of members once and for all, it falls under the head of "loose" organizations.

Loose systems, however, may have a distinct bias toward either rule of descent; indeed, without such trends it is impossible to conceive the origin of full-fledged clans. Hence, we should not be surprised to find characteristics of unilateral systems among loosely organized peoples. However, we must be careful not to ascribe a matrilineal or a patrilineal pattern on the basis of such elements: such classification must rest on explicit statements that children are reckoned kin with their mother or their father. To illustrate the danger of not observing this precaution, many tribes of the Amazon-Orinoco area practice matrilocal residence, a frequent concomitant of and hypothetical condition for matrilineal clans. But it is not an adequate cause of such clans, since the avuncular marriage reported in the same region excludes the possibility of such a system. Inheritance or succession in either line is a safer index: the nepotic rule of the *Chibcha* certainly makes it plausible that they once had matrilineal clans. Yet there, as well as elsewhere in the world, property and rank of different types have been known to descend according to diverse principles, hence there is no positive proof.

Recognizing its incompleteness, we offer the following list of tribes having indisputably unilateral types of organization:

| Matrilineal: | Patrilineal: |
|---|---|
| *Guajiro* | *Cubeo* |
| *Locono* | *Witoto* |
| *Yaruro* | *Tucuna* |
| *Canella* | *Mundurucú* |
| *Apinayé* | *Parintintin* |
| *Northern Cayapó* | *Sherente* |
| *Bororo* | *Caingang* |

**Moiety and multiple clan systems.**—The coexistence of matrilineal and patrilineal systems in the same continent (or even in the world) has been differently interpreted. Some scholars (Olson, 1933; Lévi-Strauss, 1944 b) stress the generic idea of unilateral reckoning as a feature common to both and point to the geographical proximity of matrilineal and patrilineal organizations as evidence of their genetic connection. Wilhelm Schmidt (1924) postulates a separate origin for the two, as does Lowie (1934), who holds that it is extremely difficult to pass from a fully crystallized matrilineal to a patrilineal clan system or vice versa, hence doubts that the unilateral principle—a mere abstraction—could have been diffused. He thinks it possible that there may have been several independent developments in either direction. For him the crucial problem is to explain the unilateral alinement of kin: if the conditions of *Ona* and of *Witoto* life automatically unite those persons who would belong to a patrilineal clan, he regards it as unnecessary to derive the patrilineal principle from the same center of diffusion.

Another problem bears on the relative priority of moiety and multiple clan systems. A priori, it is possible to assume that a larger number of clans were either reduced to two or grouped into two major phratries, i. e., clan unions. But it is equally plausible to suppose that two basic tribal divisions split up into lesser units which sometimes retained and sometimes lost a sense of their earlier solidarity. Increments from without may also alter an original moiety system, with unpredictable results: the *Sherente* moieties have each incorporated an alien tribe that functions in some respects like the three clans of its moiety, in other respects like an independent moiety. It is probable that the problem of priority is quite different in different cases. Thus, the *Cubeo* have some 30 clans grouped in 3 phratries. If one of these latter were to recede in numerical strength, moieties might result. On the other hand, the fusion of two *Nambicuara* bands in quite recent times, each still retaining a sense of its separateness, shows how moieties can spring up, even though we have no proof that the full-fledged dual organizations observable elsewhere did actually so arise.

Leaving speculation aside, there are several clan systems without moieties, the *Locono* and *Goajiro* ones being matrilineal, the *Witoto* and *Cubeo* patrilineal. In all 4 cases the large number of clans is noteworthy—47, 30, 31, some 30, in the order given. Though moieties are lacking, the 3 *Cubeo* phratries have been noted, and the *Locono* likewise seem to have some major grouping. The *Cubeo* phratries, though unnamed, are far from colorless, for they own songs, conduct mourning rites, and regulate marriage.

The moieties of the non-Andean peoples are in part undivided (*Canella*), in part divided into clans (*Sherente*, *Tucuna*, *Palicur*). The growth of a moiety by agglutination of new units is exemplified by the above-cited *Sherente* case.

Apart from their frequent regulation of marriage, the South American moieties display much diversity of function. They may, e. g., owe each other specific services, such as preparing each other's youths for initiation (*Bororo*), or may be regularly pitted against each other in sport (*Apinayé*), or assume specific mutual obligations at funerals (*Bororo*).

Clans, like moieties, may be of different status. The two *Sherente* clans, localized respectively, to the north and south of the eastern opening of a village rank the other clans in their moieties; and it is their prerogative to make most of the ornaments peculiar to each subdivision of their tribal half. Corresponding forms of incorporeal clan property are highly developed in *Bororo* society, where only one moiety may manufacture bull-roarers, and the several clans claim exclusive rights to particular names, songs, dances, emblems—even industrial specialties and decorative extensions of the penis-sheath for festive use.

Totemism in the full sense of the word does not seem established. Although many moieties and clans bear animal names, such appellations are frequently given likewise to whole tribes, to men's organizations, and hordes. The *Guarina* tribe on the Yapura River is also known as the Howling Monkey Indians; the *Cana*, who form the main constituent of the population along the Aiarí River, figure as Wasp people; a *Tucano* subgroup is known as Arrow-reed Indians; on the lower Querary an *Arawakan* horde subjugated by the *Cubeo* bears the name of the Giant Snake; and so forth. The *Canella* have a Duck and an Agouti society; and of their six plaza groups, five are called Giant Snake, Bat, Carrion Vulture, Armadillo, and Dwarf Parrot. Considering, moreover, that individuals of various tribes were called Frog, Carrion Vulture, Wasp, Heron, Agouti, Ibis, Armadillo, and Tapir, the use of similar designations for clans or moieties is not surprising, merely revealing a popular naming scheme.

Whereas, then, unilateral groups are far from having a monopoly of totemic names, by no means all of them bear designations of this order. The following gives a fair notion of the total distribution: Animal or plant or cosmic names belong to *Yaruro* moieties (Snake, Jaguar); to many *Bororo* clans (e. g., Porcupine, Caterpillar, Burití Palm, and Tapir); to the *Tucuna* clans (of which the 21 in one moiety are named after birds, while of the 15 in the other, 12 bear tree names, 2 have insect names, and 1 that of a mammal); to most of the 34 *Mundurucú* clans (of which 5 are named for plant species, 8 for birds, 5 for insects or spiders, and the rest mainly after the larger animals); to 2 of the 7 *Palicur* clans (Wild Pineapple, Sun); and to the *Apinayé* moieties (Sapucaia and Pará chestnut). Most of the 21 *Witoto* house communities conform to the pattern (10 are named after tree or plant species or plant parts; 2 after birds; and the remaining 9 bear various designations, such as deer, bees' nest, game animal, leguan, tapir), as do the corresponding *Yagua* units (designated ant, green sloth, partridge, wild cotton, anteater, two monkey species, acorn, tapir, cat, parrot, and forest hen). But on the other hand, the complementary dual sections of the Andean region are contrasted as "Upper" and "Lower," terms optionally applied to the *Apinayé* moieties, and to the agamic moieties of the *Bororo* and *Palicur*. The exogamous *Bororo* moieties bear names not translated by Lévi-Strauss (1936) and rendered by Colbacchini (1925) as "Strong" and "Weak." A corresponding antithesis appears in the "East" and "West" moieties of the *Canella*. Finally, the *Tucuna* moieties are anonymous, the *Sherente* ones having untranslated moiety names and their clans not being designated totemically.

The attitude of clansfolk to their animal or plant eponyms certainly does not have the tang of classical totemism in the tribes most carefully studied. The *Tucuna* recognize no mystic bond between themselves and the species whose names they bear, nor can one detect any emotional value attaching to the trees, birds, and insects in question. Naturally, the Indians sometimes see a connection between the "totems" and the "totemites," but this is invariably inconsequential and follows no fixed principle. An individual may explain his short stature by reference to his eponym or suspect a White man's affinity with the Oriolus clan because of his blue eyes (Nimuendajú, 1946). Similarly, strong arguments have been advanced against the theory of *Bororo* totemism. Here again there is no mystic tie, no food taboo, the eponym being freely killed and eaten. Interestingly enough, the one outstanding dietary prohibition—against eating the flesh of a veado deer—is tribal, hence not totemic. Thus it seems probable that a particular clan name was adopted merely to commemorate some ancestor's visionary experience (Lévi-Strauss, 1936).

Evidently the types of unit under discussion are not restricted to particular families, and tribes of the same stock differ fundamentally in their social structure. Of the unequivocally unilateral tribes three are *Arawak* (*Locono*, *Palikur*, *Goajiro*); two *Tupí* (*Mundurucú*, *Parintintin*); four *Ge* (*Canella*, *Apinayé*, *Northern Cayapó*, *Caingang*); one *Tucano* (*Cubeo*); and two isolated or doubtful (*Bororo*, *Witoto*). Of the *Arawakan* peoples, the *Locono* and *Goajiro* are matrilineal, the *Palicur* patrilineal, and only the latter have a dual division. Of the *Ge* tribes the *Canella*, *Apinayé*, and *Northern Cayapó* are matrilineal, the *Sherente* and *Caingang* patrilineal. With respect to descent two *Arawak*, three *Ge*, and one isolated tribe must thus be ranged together, set off against one *Arawak*, two *Ge*, one *Tucuna*, two *Tupí*, and one doubtful tribe.

Though we do not know what precisely happened, the logical implications of these facts should be recognized. For example, within the *Arawakan* stock the ancestral people must have been either loosely organized, or matrilineal, or patrilineal. On the first assumption, the *Palicur* may either have evolved their clans independently; or borrowed them from a patrilineal center; or may have evolved or borrowed a matrilineal system that was subsequently superseded, through evolution or diffusion, by a patrilineal one. Corresponding conjectures can be framed for the *Locono* and *Goajiro*. But whatever actually happened, it is obvious that the sequence of events has not been the same in all three instances. So far as logical possibilities go, it need not even have been the same among the *Locono* and the *Goajiro*.

To turn to another matter, it has sometimes been suggested that definite economic types or cultural levels correspond to types of social organization. South American data lend little support to this assumption. In the Tropical Forest area alone there is almost every type of social structure, yet the variations in economic activity are trifling. Loose organizations, patrilineal malocas, patrilineal and matrilineal clans, and patrilineal and matrilineal moieties are all consistent with essentially similar food-producing techniques. Nor can it be said that looseness is a necessary concomitant of the hunting stage: the patrilocal *Ona* bands come very close to fixed unilateral groups, and the *Yaruro* are unequivocally matrilineal. It is a suggestive fact that matrilineal systems exist equally well among the *Yaruro* hunters, the rather intensively agricultural *Locono*, and the *Canella*, who did some farming, but largely depended on gathering and hunting.

Moieties cannot be treated wholly as a distinctive type of clan, for some of them do not conform to the concept of a clan at all. That is to say, sometimes membership is not automatically fixed by heredity and does not affect marriage arrangements, yet since there is a clear-cut dichotomy, the resulting halves may be correctly designated as "moieties."

Moieties may be distinguished as exogamous, endogamous, or agamic (i. e., indifferent as to whether unions occur within or without the two groups). The *Tereno* moieties designated as "Good" and "Bad," possibly in correlation with the two brothers figuring in native myth, are endogamous, marriage between the moieties being forbidden. The dichotomy is said to have been made apparent only at the annual war dance (Hay, 1928, p. 108 f.). Among the *Bororo* and the *Canella* a twofold dichotomy yields in each tribe a pair of exogamous and a pair of agamic moieties. The *Bororo* of the Rio Vermelho not only localize their exogamous moieties in the southeast and the northwest of the settlement, but also draw an axis perpendicular to the course of the river, thereby creating an Upstream and a Downstream half, each of which comes to include houses of both exogamous divisions. The *Canella*, too, have agamic moieties embracing the entire population, but functioning essentially only during the rainy season; membership hinges on the acquisition of certain personal names. In addition, males only are dichotomized on two further principles, so that there are two tribal and two masculine moiety systems.

Exogamous moiety systems characterize the *Bororo*, *Canella*, *Northern Cayapó*, *Sherente*, *Caingang*, *Yaruro*, *Tucuna*, *Mundurucú*, and *Parintintin;* agamic systems occur among the *Apinayé*, *Palicur*, *Cañari*, *Aymara*, *Quechua*, *Chipaya*, *Bororo*, and *Canella.*

The question arises in how far these several specimens of a dual division are genetically related. No one believes that they have all developed in complete independence of one another; opinion differs only as to the extent of diffusion that must be assumed. One can hardly doubt the historical unity of the several Andean systems. A 16th-century source already mentions the division of the *Aymara* into two halves bearing the names hanansaya, "Upper band," and urinsaya, "Lower band." The same designations appear in ancient Cuzco and in modern Tiahuanaco, in which latter the moieties are localized to the north and south of a central square. In Carangas the "ayllus," often interpreted as clans, are still grouped in major divisions called aransaya and manansaya. The modern *Chipaya* bilingually use either these *Aymara* terms or vernacular equivalents meaning "east" and "west" in token of their orientation. The significant parallels among the *Cañari*, *Quechua*, *Aymara*, and *Chipaya* are, then: definite association of dual divisions with complementary cardinal directions; use of the designations as "Upper" and "Lower"; their agamic character, specifically established for the *Chipaya* by Métraux (1936). Taking these similarities in conjunction with the geographical contiguity of the peoples in question and the accepted dissemination of other features within the *Inca* Empire, we are warranted in speaking of a single Andean moiety center.

Turning eastward, it is also possible to reduce the conceivable cases of independent dual organizations. The duplication of the *Bororo* and *Canella* systems is easily explained by the hold which the pattern of dichotomy had evidently obtained on the minds of these natives, which with the *Canella* led to still further experimentation restricted to male groupings. The case of the *Apinayé*, too, seems simple. These people share matrilineal localized moieties with their fellow-*Timbira* as well as with their other fellow-*Ge*, the *Northern Cayapo*, whom they resemble in many other traits. They depart markedly in that their dual scheme is agamic, marriage being regulated by an absolutely unique fourfold division of the tribe into kiyé, which can be regarded only as a late specialization. Moreover, though primarily called after two species of chestnut, the moieties are often designated as Upper and Lower, corresponding to *Pau d'Arco Cayapó* usage. These three *Ge* systems must, therefore, be regarded as offshoots from a common ancestral type. *Apinayé* agamy cannot be considered fatal to this assumption, for however important the regulation of marriage may be, its transfer from a larger to a smaller unit has been rendered probable in various parts of the world.

The point at issue is whether the residual instances, Andean and non-Andean, are amenable to similar treatment. Olson and Lévi-Strauss have stressed a pair of widespread parallels whose significance certainly cannot be ignored. The *Sherente*, *Canella*, *Apinayé*, *Northern Cayapó*, and *Bororo* have a definite localization of moieties within the settlement, thus resembling the Andeans of Cuzco and Tiahuanaco; the *Tucuna*, though without this feature, at least mythologically link their halves with east and west. Further, the characteristic antithesis of an "Upper" and a "Lower" moiety reappears among the *Palicur*, *Apinayé*, *Cayapó*, and *Bororo*. Surely diffusion is indicated; and, if so, the probability is that the higher cultures played the donor's part. It is, of course, not necessary to assume that at the time of dissemination the peak of advancement had been reached in the west; in fact, Lévi-Strauss (1944 b) and Josef Haeckel (1938) explicitly speak of an antecedent stage, higher than that of recent East Brazilians, yet appreciably lower than that of the *Inca* Empire.

The argument for diffusion, even for diffusion from an Andean center, may be accepted, however, without conceding the derivation of East Brazilian moiety systems. An alternative hypothesis assumes that these were preexistent and merely adopted from the west a convenient spatial arrangement and a plausible nomenclature. The advantages of this alternative view lie in its avoidance of an indefinite series of unprovable auxiliary hypotheses.

For one thing, the Andean moieties are agamic, and their East Brazilian counterparts mostly exogamous—at least two of them (*Tucuna*, *Sherente*) rigorously so. If the marriage-regulating feature was added by the Brazilians to an agamic Andean system, then one of the most vital aspects of their organization was *not* borrowed from the west, but added independently. The alternative assumption would be that the Andean moieties at one time were exogamous, but this would be a wholly gratuitous conjecture. There even seems to be doubt whether the ayllu, the closest Andean equivalent of a clan, was exogamous. H. Trimborn (1927, p. 308) asserts local and clan exogamy, but Louis Baudin (1928, p. 51) quotes Garcilaso and Montesinos on behalf of the contrary thesis: "Si la loi d'exogamie—domine l'organisation primitive du marriage, elle n'apparaît pas au Pérou, sinon exceptionellement—." In fact, he flatly asserts local endogamy: "Toute union en dehors de la communauté était interdite." Tschopik (Handbook, vol. 2, p. 544) at least concludes that the *Aymara* ayllu did not formally regulate marriage, and that this unit *tended* to be endogamous. At all events, the positive evidence for exogamous dual divisions in this area is nil.

In other words, the Andean hypothesis accounts for the orientation and the designations of most of the Brazilian moieties, but fails to explain their most vital, in some instances their only, function. But exogamy is only one of the positive traits typical of the eastern systems and lacking in the west. The Brazilian organizations do not offer the familiar spectacle of pale replicas of an intricate pattern that exists on higher planes. On the contrary, it is the Andean system that appears colorless by comparison: of the manifold ceremonial involvements, of the ownership of personal name-sets, of the linkage with athletic games, of the reciprocal duties at funerals, the Highlands do not seem to manifest a trace. Have, then, the *Ge* and the *Bororo* borrowed all these traits from an ampler model that subsequently degenerated? That is conceivable, but every such unauthenticated trait means an additional auxiliary assumption and correspondingly weakens the primary hypothesis. If, on the other hand, the Brazilians independently added this rich content to the fleshless Andean skeleton, it is difficult to see why they could not have evolved the meager idea of two antithetical social units without extraneous assistance.

The Andean hypothesis has to cope with still another difficulty. All the Highland cultures are patrilineal, but the *Yaruro*, *Bororo*, *Apinayé*, *Canella*, and *Cayapó* are uniformly matrilineal. Hence, the difficulty so keenly felt by some scholars of passing from one rule of descent to another appears in a special form here. The recipients must have borrowed a patrilineal system, then altered it for no obvious reason into a matrilineal one, and passed on this amended organization. Or, there has been borrowing by countersuggestion, certainly an unusual phenomenon: concretely it would mean, among other things, that seeing a mother's brother placed in a different unit from his sister's children, the observers of an alien tribe would promptly put these kinsfolk in the *same* category. The psychological processes underlying this metamorphosis are certainly not clear. Or, it is conceivable that the Andeans were matrilineal when they passed on their institutions to the tribes in question, later evolved a patrilineal rule, and finally disseminated the new system to the *Tucuna*, *Mundurucú*, and *Palicur*. This again is inventing auxiliary hypotheses to prop up the primary theory.

All these obstacles are avoided by the simple alternative here proposed: Exogamous moieties existed in Brazil prior to Andean influences, which brought merely localization and the "Lower-Upper" nomenclature. These features could be adopted by either matrilineal or patrilineal tribes without the slightest wrench in the classification of kin.

It is not asserted that this thesis is demonstrated, but merely that it has greater probability than the rival hypothesis, since it avoids the grave difficulties inherent in the latter.

## ASSOCIATIONS

This term comprises social units of manifold character which primarily have membership resting on other factors than a real or assumed blood-tie. The commonest examples are "tribal societies," i. e., associations admitting all males, but no women; bachelors' and men's clubs; age classes of either sex; and an indefinite number of organizations serving religious and sportive, or other secular, purposes.

In South America sex dichotomy occurs frequently without culminating in a sex-restricted tribal society with a formal initiation. Apart from the universal division of labor between husband and wife, we must note the common separation of men and women at meals (e. g., Guiana *Carib*, *Yagua*, *Yuracare*, and Chaco). The cleavage finds expression in various ways and on many occasions. In wartime *Mundurucú* braves all slept in a common structure away from the women (Spix and Martius, 1823–28, p. 1313), but no special building was required. An *Ashluslay* settlement has the dwellings arranged round a plaza within which the men assemble in the shadow of a tree, though a special shelter may be erected. Rigid separation, however, is not universal; even in the Chaco the *Chiriguano* allow women to join in public debates and festive carousals.

In many cases, to be sure, there is a veritable men's clubhouse. The *Chacobo* have a substantial structure of this order which, except for their obligation of a matutinal sweeping, is barred to women. There the men gossip, drink, dance, play panpipes, weave baskets, manufacture weapons, and prepare feather ornaments. It also serves as the married men's, bachelors', and strangers' dormitory. The *Bororo* similarly combine a workshop, lounge, and ceremonial hall, but only guests and bachelors sleep there, though men are privileged to use the club for consorting with their sweethearts.

The quarters for bachelors, guests, and married men are variously combined or distinguished. *Canella* and *Apinayé* youths segregate themselves informally by sleeping outdoors in the center of the plaza whenever the weather permits; the *Carajá* have a hall for storing masquerade outfits that accommodates bachelors and widowers, whereas visitors sleep in the chief's dwelling (Krause, 1911, pp. 201, 332); and every *Sherente* village or even temporary hunters' camp has a hut for boys who have attained the requisite status conferred with a special form of girdle. In the last-mentioned tribe the youths are obliged to remain chaste, on pain of expulsion, so that the *Sherente* institution sharply contrasts with the *Bororo* counterpart.

Probably most widespread among the South American associations is the tribal society, typically characterized not only by the exclusion but also by the intimidation of women and uninitiated boys. Commonly masquerade costumes or supposedly supernatural musical instruments, sometimes both, are strictly tabooed to all except those particularly instructed in the mysteries. These conceptions range from Venezuela to Tierra del Fuego. On the upper Orinoco Humboldt found the cult of the "botuto" (sacred trumpet), revealed only to sexually pure youths after fasting and flagellation. Women were put to death even if they only accidentally caught a glimpse of the instrument. In 1798 a missionary managed to save a young woman who had incurred this judgment (Hermann Hauff *in* Humboldt, 1862, 5:110 f.). *Cubeo* neophytes learn about the instruments taboo to women and are whipped in order to grow. On the upper Rio Negro and its affluents the relevant performances constitute the outstanding festival. All females and little boys retire at the first sounds of the holy flute, and are killed—allegedly by the son of the ancestral hero of the tribe—if they catch sight of it. Novices are flogged and therewith enter the "men's secret society" (Koch-Grünberg, 1923 a, p. 219 f.). Such ideas are common among remote *Arawak* groups, such as the *Mojo* and *Paressí* (Alfred Métraux, 1942 a, pp. 76, 168). On the basis of Fric's observations, Métraux has traced the institution into the Chaco, where the *Chamacocco* masquerade to frighten the women, while the boys chosen for initiation learn that the masqueraders are not spirits but their own tribesmen and are impressed with the obligation to keep the secret (Métraux, 1943 b). *Bororo* boys, after receiving a penis-sheath, are permitted a view of the bull-roarer, at sight of which women are supposed to die; henceforth the lads take part in rites from which they have hitherto been barred.

The tribal men's society may center in the men's club (*Paressí*), but in some instances keeps its mysterious paraphernalia in special huts or "temples" (*Mojo*). A faint echo of the classical men's society is perceptible in the *Sherente* men's attempt to frighten the assembled women.

*Mundurucú* and Fuegian myths depict an early matriarchate, women controlling the mysteries (the *Mundurucú* clubhouse and wind instruments, the Fuegian masquerade outfits) and thus lording it over their husbands. The men, however, discovered the secrets and turned the tables on their wives. The *Ona* initiation, apart from the boys' training, centers in the bullying of the women by mummers. Among the *Yahgan*, the educational phase forms the core of the initiation festival, which is obligatory for both sexes. However, the antifeminist flavor persists in weakened form in another ceremonial, which unites men in an effort to awe outsiders by spirit impersonations comparable to those of their neighbors. A still more attenuated form of men's society is reported from the *Alacaluf*.

Whenever mysteries taboo to women are described, a men's tribal society or derivative institution may reasonably be inferred. This does not hold true for mere reports of boys' puberty rites, however elaborate (Guiana), since these need not culminate in a men's organization. Even where a definite body is created, its nature need not conform at all to the misogynist pattern. The *Apinayé*, too, insist on the initiation of youths as a prerequisite to marriage. There are two grades, the senior one enrolling the boys in the Warrior group. This they leave automatically, becoming "Mature Men" as soon as the next younger set has completed the Warrior training. At the age of possibly 50, when unfit for active sports, the men unobtrusively drop out from this older group, ultimately forming a village council. The Warriors are a status group, but theirs is the only organized unit of all, and their solidarity wanes as they become "Mature Men." Further, the antifeminist motif is quite lacking; as a matter of fact, girl auxiliaries play a prominent part in the institution.

The otherwise comparable *Canella* festival has far more complex associational consequences. Joint participation establishes a life-long tie; and even the young boys mimicking their seniors are definitely organized. However, these several age groups never consolidate to constitute one tribal society. Further there is no antagonism toward women nor studied exclusion of them; girl auxiliaries figure significantly in the activities of the four most active age classes.

Boys' initiation ceremonies, then, do not necessarily imply a tribal society, nor is the performance of masquerades a safe criterion. The best-known *Ge* tribes have periodic performances by mummers, but their disguises are altogether profane and inspire no one with awe.

Some authors, accepting as more or less historical the Fuegian origin myths, regard the antifeminist type of tribal society as a reaction against matriarchal conditions. But, apart from the lack of evidence for a South American matriarchate, the relevant data are contradictory as to any close correlation between masculine associations and the phenomena theoretically linked either with a gyneocracy or its opposite. The *Bororo* are strictly matrilineal, but there is no suggestion of feminine ascendancy and women are as strictly barred as anywhere from knowledge of the mysterious bull-roarer rites. When the *Sherente* enact a scene of intimidating their women, such as does not occur among their matrilineal fellow-*Ge*, the phenomenon may be in some way correlated with the difference in mode of residence, but it is surely far-fetched to see in it the reflection of a great social upheaval by which women were brought to their present state. Such problems are best dealt with not by sweeping generalizations, but by a refined analysis of the differences between otherwise comparable populations. Why, for instance, are the *Yahgan* so markedly less antifeminist than the *Ona?* It is very probable that the better status of women in this case is a consequence of their incomparably greater role in aboriginal *Yahgan* economy.

However this may be, women's associations of any kind are rare. Equivalents of the ceremonial sororities of the *Hopi*, of the *Mandan-Hidatsa* societies magically influencing the hunt and the crops, and of the *Cheyenne* craft guilds in North America are wanting. Suggestively enough, it is among the patrilineal *Sherente* that a women's association turns up. It is quite obviously not the result of a protest against masculine ascendancy, but a pale reflection of the men's societies to be noticed presently. The associational pattern of the culture is so pronounced that the women united in a copy of their husbands' organizations. There is no formal admission; even nurslings are taken to the society's fixed assembly place and continue to attend as they grow older. At festivals the members paint themselves in their husbands' style and, as in the men's societies, there are two leaders and two attendants. Unlike its models, the women's organization completely lacks economic significance. The only ceremonial performed by it involves the bestowal of names on two little boys.

Feminine as well as masculine age classes occur among the *Northern Cayapó*. Membership in several of the grades hinges for both sexes on parental and physiological rather than on conjugal status: females between puberty and their first delivery are in one class, those who have borne one child form another. The *Sherente* have no age classes for females, but split up the youths of the bachelors' hut into six divisions, distinguished by their body paint and the form of their hair-sheath.

Several other types of association require mention. None of the six festive societies of the *Canella* has an initiation. A man enters the Clown's organization by virtue of his talent for buffoonery; in the other five cases admission automatically follows acquisition of particular personal names. These qualify the bearer simultaneously for membership in two of the festive societies and in one of six other groups which have each a definite place of assembly in the plaza and distinctive decorative patterns. Neither the festive societies nor the plaza groups have religious significance; as explained, masquerades are devoid of sacred connotation.

The *Sherente* have four men's societies charged with serious practical functions. It is they that cooperatively make clearings, engage in major hunting expeditions, and exploit stands of wild trees, which are owned by the several societies. Each organization forms a tactical unit in warfare, organizes log-races for its members (not in competition with other societies), and figures in one great religious ceremony, the feast of the dead. When a boy is about 8 years of age, his father enrolls him in one of the four organizations. The choice is affected by several considerations: generally the son does not enter his father's society, some attention being paid to the lad's wishes, but probably more to the elders' preference, who try to maintain approximately equal numerical strength in the four associations. The affiliation normally lasts for a lifetime. Only one society—the one that according to the origin tale had the youngest members when organized—has a formal initiation. Independently of the entrance into a society, each boy at the same age also is assigned to one of the two competing tribal sports teams.

The complexity of the social arrangement in this tribe is indicated by conditions in any of their bachelors' halls. Here the boys of one moiety occupy the north side, the south side belonging to the complementary moiety. The space from west to east is divided among the four societies. Beyond these localized units there are the six age grades through which each youth has to pass during his 3 or 4 years' residence; and every one of them further belongs to one of the two athletic teams.

Warrior societies are reported from the pre-equestrian *Guaycurú* and from the *Abipón*, the latter having a military association in each band. The members were renowned braves, who underwent a test of fortitude and received a new name. They were set off from the common herd by tricks of speech and the right to honorific forms of address. Some women were admitted for their husbands' or kinsmen's sake.

## GOVERNMENT AND LAW

**Separatism.**—It is difficult to form a clear picture of pre-Columbian political organization in much of South America, for aboriginal conditions were rapidly obscured by Caucasian influences and some of the earliest observers are liable to the suspicion of having misinterpreted what they saw. Nevertheless, certain points may be taken as established, among them the extraordinary separatism that prevailed in much of non-Andean South America. Whereas Baudin (1928) sets the population of the *Inca* empire at over 11 million and even Kroeber (1939) at 3 million, a great many peoples stand at the opposite pole. (See also Handbook, vol. 2, p. 184, and this vol., p. 656.) In 1774 Forster's figure (in Gusinde, 1937) for the total *Yahgan* population was only 2,000 and Gusinde's estimate for aboriginal times does not exceed 2,500. As a matter of fact, these numbers represent a linguistic family, not a political entity. There were five dialectically diverse groups with a very moderate sense of solidarity, and each was subdivided into local bands bearing the name of a bay or some other geographical feature. The sense of kinship was stronger in this lesser aggregate, but a really close tie united only the members of a family, who have been said to constitute a miniature state. Similarly the *Ona* were split into 39 hordes, each owning its hunting territory, upon which neighbors would not needlessly trespass; the numerical strength of these bands ranged from 40 to 120 persons. An initiation festival would, indeed, bring together members of distinct hordes, but it was an extraordinary event to have as many as 200 people assembled in one spot.

Equally extreme was the separatism of the *Botocudo:* Manizer's (1919) *Krenak* band defined its boundaries by landmarks and regarded them as inviolable; and even bands of the same tribe were constantly waging feuds. In a large number of cases, then, the South American village, horde, maloca, or even family constituted the sole counterpart of the modern state. The *Sherente*, credited with an unusual racial solidarity, go beyond these limits, for different settlements unite in opposing alien enemies and a village chief is chosen and deposed by a conclave of chiefs representing the several villages. Yet there has never been a paramount tribal chief, and the sporadic attempts toward wider union are balanced by such centrifugal tendencies as the feuds between associations over stands of burití and babassú trees or the assumption of punitive powers by a moiety.

The Panamanians, relatively advanced as they were, never achieved major integration. According to the 16th century chroniclers, a narrow area was divided up among sundry independent and mutually hostile peoples. The army of 4,000 warriors that one chief mustered against the Spaniards probably marks the acme of cohesion in non-

Andean South America. The figure is roughly paralleled by the 3,000 "*Tapuya*" who aided the Dutch against the Portuguese and by the 5,000 *Chiriguano* who rebelled against the Whites in 1890. The entire population would, of course, be several times as large.

**Chiefs.**—As to the nature of the political ties, the *Inca* Empire with its centralization of supreme power in a divine ruler again stands at one pole, while at the other are various groups without any official authority whatsoever. Such authority is lacking, e. g., among the Fuegians; for much of the year the *Yahgan's* contacts are restricted to members of his family, outsiders being treated in accordance with traditional notions of right and wrong. Thus, the individual adult enjoys a maximum of personal liberty, though old men of exemplary character may informally exert much influence. Only in order to control the throng at an initiation festival two *Yahgan* temporarily exercise definite functions—one a venerable patriarch charged with preserving the traditional procedure, the other a younger, but mature master of ceremonies to direct the daily routine. On a higher level, the *Jívaro* have leaders only for raids; they lack the word for "chief," a concept they are obliged to express by a Spanish or a *Quechua* term (Karsten, 1935; Stirling, 1938).

More commonly a community or major group has a recognized head, who may be provided with insignia of his status. A newly appointed *Sherente* chief thus receives a decorated bow, a sheaf of arrows, three staff-clubs, and for public appearances a ceremonial lance. His *Chiriguano* colleague puts tufts of hair on his head, wears greenstone ear-drops, and carries decorated dance poles. Tasseled staffs of walking-stick size were an old-fashioned *Palicur* "captain's" or "lieutenant's" emblems; and a "*Tapuya*" chief's tonsure and extra long thumb nails marked him off from the rank and file.

However, a permanent and accepted headman is not necessarily the ruler of his people. Innumerable explicit statements either derive such influence as he exerts from the number of his kindred or deny him any coercive powers except in times of danger. A *Cariri* chief was strong in proportion to the number of children and nephews supporting him (Martin de Nantes, 1706, p. 103). In one of the autonomous modern *Taulipáng* settlements the headman has very little to say until hostilities break out with another group. In 1639, Herckman (Pompeu Sobrinho, 1934, p. 18) found the "*Tapuya*" chief highly respected when he led his warriors, whereas at home "Não é tão honrado (he is not so honored)." A *Carajá* chief is wholly dependent on his villagers' goodwill; if they are dissatisfied, they simply desert him. A historical case occurred in 1792, when the people quarreled with the chief, whom they considered a malevolent sorcerer, and took refuge on a sandbank (Krause, 1911, p. 321).

For a correct picture of political life we must constantly keep in mind the concrete arrangements of living. Where the social unit coincides with the individual family, its head naturally assumes control, possibly with occasional arbitrariness, but restrained by sentimental considerations. But a great many South American tribes are made up essentially of expanded families, each in an independent community. This holds true equally for the predominantly matrilocal Guiana groups and for the patrilocal maloca settlements in the Rio Negro country. To take the former type, an ambitious man eager to found a new village can do so through the aid of active young men who, in return for their services, become his sons-in-law. In such circumstances the headman may, if that is his disposition, be a patriarchal bully, but in the majority of cases the relationships are likely to assume a genial tinge all around. He is, after all, dealing with his sons (so far as they are not married elsewhere), his daughters and their husbands, and his grandchildren. To be sure, a son-in-law is sometimes defined as a "serf," but at bottom this means merely that he is an alien obliged to justify by work his existence as a coresident and son-in-law. This is proved by the fact that he is occasionally chosen as the new chief, taking precedence of his wife's brothers (*Rucuyen*). To sum up, in these simpler instances of aggregation the foremost man exercises control essentially as the head of a household.

When several communities unite or if the single village has a larger, less homogeneous population, the situation grows more complicated, but this does not yet in itself imply an appreciable increase in the authority of a single leader. As a matter of fact, even relatively small groups may have two or more titular chiefs, none of them supreme unless by virtue of individual gifts. In 1940 the missionized *Górotire Cayapó* had as many as 5, and 2 years earlier the 300 *Canella* of Ponto village had 3. In such situations either the senior incumbent or the strongest personality is likely to gain ascendancy, but would rarely be an autocrat. A common check, either with or without fellow-chiefs, appears in the assembly of adult men, which may be quite loose (Barama *Carib*), but often appears as a formal council. The three *Canella* chiefs display no lust of power, receive not a whit more in the way of food offerings than any council member, and perform precisely the same work as any tribesman. This latter condition, in fact, sometimes holds true even for genuine rulers, as among the *Chiriguano*, where no Indian refuses to obey the chief, who, nevertheless, performs arduous labors himself while his wife cooks her meals and sweeps her house precisely like other women. The presence of a serf or slave caste naturally alters the situation. (See below.)

Considering the limited powers of a *Carajá* chief, it is strange that special training for the office is deemed essential. The presumable heir is educated for the purpose from childhood, being segregated for 4 years in a hut, where his father imparts relevant instruction until a great festival indicates the son's competence. An unschooled chief's son is ineligible. Failing chief's children, the men of the village elect a young boy, who, if his mother consents, is then prepared for the office in the customary way (Krause, 1911, p. 322).

Although the functions of a chief are often enough ill-defined, certain features recur again and again in the descriptive accounts. He is a peacemaker, represents his people in contacts with other tribes or Whites, welcomes visitors, and directs economic undertakings. Very typical and documented for groups as distant as *Tehuelche* and "*Tapuya*" is the indulgence in admonitory harangues, personally or by proxy, a trait reminiscent of various North American Indians. Concerning the *Pilagá* we learn:

> Every day at sunset, the cacique whose spirit moves him launches into a vast improvisation. . . . The customary theme of these harangues is peace, harmony, and honesty, virtues recommended to all the tribesmen. [Métraux, 1937, p. 390.]

Far to the north the *Sherente* chief assembles the village for similarly didactic purposes:

> Stepping in front of the semicircle and resting his hands on the ceremonial lance while rocking his body back and forth, he would impressively and vividly harangue the crowd for possibly an hour. [The gist of his remarks was to inculcate the need for preserving ancient ceremonial and custom.] In conclusion he would urge all to live in peace and harmony. . . . [Nimuendajú, 1942, p. 15.]

At daybreak the *Tupinamba* chief would revel in similar admonitions (Métraux, 1928 b, p. 179). Here and there this oratorical office is divorced from the chieftainship, devolving on a special dignitary, as among the *Apinayé*, whose chief and elders in secret session choose a "counselor." "His duty lies in admonishing the villagers to preserve traditional usage. . . ." He does this almost every morning. As part of his duties he also superintends ceremonies, often plays a major part in them, and when food is distributed on such occasions he receives a share at least equal to the chief's. The "*Tapuya*" "king," Jan de Wy, had a herald announce what the people were to do, where and when they were to go, where to camp, and so forth (Barlæus, 1659, p. 695 ff.) Among the *Cashinawa*, again, it was the chief himself who exhorted his people to live in peace and avoid adultery; and every morning he would allot tasks for hunters and fishermen. Given this emphasis on oratory, one understands the explanation a *Chiriguano* offered for the existence of a female chief: "Her father . . . had taught her to speak" (Nordenskiöld, 1912 a.)

On the upper Xingú, generous entertainment of the people is a prerequisite to popularity as a chief, and one lawful heir to the dignity is known to have emigrated because he was afraid of the expense involved in the office.

Judicial functions in a strict sense are rare, for legal procedure as a rule lacks the formalities typical of African Negroes. What some writers attribute to the chief under this head for the most part coincides with his duties as a peacemaker and involves no means for enforcing a verdict. In certain cases, however, something more is implied. A *Yagua* jury composed of the chief and the elders might exile an offender against the laws of incest. Among the *Apinayé* the chief inaugurates steps against sorcerers, and the supposed victim's kindred carry out the sentence. Similarly, a *Sherente* chief orders the execution of maleficent magicians, but apart from this obligation the chief acts merely as a moderator between contending parties. In other words, torts predominate over crimes; a husband and an adulterer will fight a duel; bodily injury is atoned by an indemnity to the injured person; murder was formerly avenged not by any central authority, but by the dead man's moiety—in some instances perhaps by his association. Strangely enough, a *Pilagá* cacique will thrash a thief who fails to restore stolen property, but does not interfere in murder cases, vengeance being left to the aggrieved family, who may or may not content themselves with an indemnity. On the other hand, a 17th-century *Mojo* chief personally chastised two unresisting murderers.

Comparatively elaborate procedures are ascribed to the early natives of Panamá. Adultery, theft, murder were all punished by death, judgment being passed by the chief. Commoners were captured by special officers who executed the chief's orders on them. When the offender was a nobleman the chief assembled his subjects, proclaimed the criminal's deeds, clubbed him over the head, possibly also transfixing him with a lance by way of demoting him, and allowed an attendant to complete the execution if necessary. Notwithstanding this unusual display of legalism, self-help was not abrogated: the owner of a maize field who caught a pilferer was allowed forthwith to cut off both his hands (Lothrop, 1937 a).

The factors which lead to an intensification of the chief's power are not altogether clear. Though it is great in some of the more complex cultures, there is no simple ratio between, say, economic level and centralization of authority. The fairly advanced *Jívaro* have no chiefs, whereas those of the *Bororo* exert considerable influence. Kirchhoff (1931, p. 191) has suggested as concomitants of exalted chieftainship the greater extent and stability of the local unit, as well as the wealth of legends centering in the deeds of the chief's ancestors. These points merit further investigation, but cannot be regarded as established.

One statement may fairly be offered. The chief's influence is indefinitely enhanced when he combines religious with secular functions, a phenomenon that recurs with tolerable frequency and on different levels of complexity. Among the *Cágaba* (Preuss, 1919–20) there are no chiefs excepting the priests: "the priests are at the same time the chiefs"; all the warring *Cágaba* mentioned in the texts are explicitly called priests. Similarly, in 1915 G. Bolinder (1925, p. 111) found the *Ica* firmly convinced that their leader must be a medicine man; and in 1941 these Indians were still ruled by their spiritual guides, whose "power seems singularly unaffected by the group's 20 years' exposure to Christianity" (Knowlton, 1944, p. 264). Again, the head of each *Yaruro* moiety (Petrullo, 1939) and of every Tsatchela district in Ecuador is invariably a shaman (Von Hagen, 1939, p. 39 f.).

Far to the south, and very near the bottom of the scale in material advancement, each *Botocudo* band has for its leader the "strongest" man, with strength defined not as physical (nyipmrõ), but as supernatural power (yikegn) granted by the spirits. The beneficiary has the ability to transform himself and others, to cure by remedies which his supernatural patrons supplied, and even to resuscitate the dead. Characteristically, a band has been intimately tied up with its chief, so that the names of many *Botocudo* leaders have come down to us, whereas those of neighboring tribes' chiefs are unrecorded (Nimuendajú, 1946). A classical case of shaman-chiefs is that of the *Apapocuva-Guaraní* with their prolonged series of migrations under the spell of such leaders. Fusion of the two functions is at least possible among the *Chiriguano*, common on the Pilcomayo River, and regular in *Tapirapé* society. Of *Mojo* chiefs it is said that those who were also shamans enjoyed "a far stronger position" (Métraux, 1943 a). Even when the chief is not actually an intermediary between his people and the spirit world, his control of ceremonial regalia and the prerogative of fixing the dates of religious festivals or of directing them will surround him with a halo of prestige. This, in addition to a strong individuality, may explain the influence of the paramount *Bororo* chief met by Lévi-Strauss (1936) in the Rio Vermelho region. Another suggestive instance is that of the "*Tapuya*" "king" who would blow smoke on sick boys, in other words, who in particular circumstances played a shaman's part (Barlæus, 1659).

A priori, one might expect a close correlation between warfare and aggrandizement of the chief's power; and this assumption gains some support from the recurrent statements that his authority, however limited otherwise, becomes autocratic in times of hostilities. It would seem that in martial tribes the step toward making this condition permanent would be taken over and over again by ambitious men, but actually there is little evidence of such a development. The

*Jívaro* are as militaristic a people as any, every man aspiring to gain renown as a fighter. However, neither at present nor in the 16th century did ambition turn toward establishing a dictatorial government. Accordingly, the very considerable power exercised by *Chiriguano* in contrast to *Ashluslay* chiefs may have other causes than those which at first blush seem plausible, as is indeed indicated by the above-mentioned case of a woman at the head. It should further be noted that the war chief may be quite distinct from the village chief (*Yuruna*).

**Rules of succession.**—Succession is often filial (e. g., *Yuruna*, *Sirionó*, *Guaraní*), but appears with important qualifications. The *Pilagá* recognize as heir only a son of the chief's first wife. In many tribes substitutes serve if the customary successor is deemed unfit. A variation reminiscent of Tenachtitlan combines the collateral with the filial principle: a man is succeeded, in turn, by his brothers, his son assuming office only after the death of his several paternal uncles (*Siusí*, *Cubeo*). Many tribes preserve filial succession by exempting a chief's son from their otherwise general rule of matrilocal residence. Often the law of succession is flexible: a *Witoto* who lacks male issue may import the husband of his daughter to become chief after him; and a *Rucuyen* chief appointed as his successor not one of his adult sons, but a capable son-in-law. On the death of one *Bacaïri* chief who had only a young daughter the widow's brother assumed the title, but was superseded by the girl's husband as soon as she got married. Several instances of nepotic succession are well substantiated (*Chibcha*, *Bororo*, *Apinayé*). The *Yaruro* theoretically prefer the nephew to take over, but are practically guided by his suitability. The *Canella*, with their multiple-chief system, do not fix succession by matrilineal descent as might be expected, but have the chiefs and the council of elders fill a vacancy. Appointment as well as deposition of chiefs by a conclave of his colleagues occurs likewise among the *Sherente*, so that the hereditary principle is by no means universal. Lacking sons, a *Carajá* chief may be succeeded by a daughter, not by her husband; during the chief's absence his wife or a son may act as a substitute (Krause, 1911, p. 322 f.).

**Prestige; rank; classes.**—In South America, as elsewhere, the absence of hereditary classes does not exclude marked differences in status, which may or may not be coupled with differences in political power. The chiefless *Yahgan* pay reverence to old age, and even where a shaman holds no secular position his influence on everyday life may be very great. Unusual competence in any esteemed activity may imply kudos and its natural consequences: a *Jívaro's* reputation is directly proportionate to the number of enemies' heads he has taken as trophies; and a *Guató* is similarly honored for every jaguar he has slain; indeed, a youth without such achievements to his credit is ineligible for marriage.

The *Sherente*, with their wealth of ceremonial, organize a good many offices that confer privilege on their incumbents. For example, chiefs, leaders of men's associations, and sundry other dignitaries, along with their wives, are entitled to a memorial celebration. Again, a motley aggregation of *Canella* persons—chiefs, age-class leaders, girl auxiliaries of the men's associations, female leaders in singing, and the men whom alien tribes elect as their honorary chiefs and quasi-consuls—receive a special form of burial and rank as a ceremonial aristocracy called "hamrén." This example illustrates the distinction between titular and actual eminence, for the councilors as a body, who largely dominate communal life, are not ipso facto hamrén, nor is the precentor, though he plays a far more conspicuous part than his female counterpart.

Sometimes distinctions are introduced in otherwise democratic societies by the grading of comparable social units. Thus, one of the *Bororo* moieties is superior to its complement in several ways: it owns the best ornaments, has the exclusive right to make bull-roarers, and invariably provides village chiefs (Lévi-Strauss, 1944 a, p. 267). The clans of these people also differ noticeably in wealth, especially of the immaterial type, so that some of them are considered rich, others poor. Again, an *Apinayé* chief must belong to the Kolti moiety, which ranks the other in any joint ceremonial; and among the *Sherente* the dual division associated in the natives' mind with the sun regularly takes precedence of the lunar moiety. The *Sherente* also suggestively illustrate the effects of incorporating aliens. Two remnants of decadent tribes were at one time added, one to each moiety, and formally assimilated by having an appropriate domiciliary site assigned to them. Nevertheless, they still figure in native consciousness as "ethnic minorities" and in recent years one of the new clans has been twitted with its inferiority by the very moiety of which it now forms part.

Whereas the preceding cases illustrate emphasis on status and prestige rather than an aristocratic trend, this no longer holds for the *Chiriguano*. Their paramount chiefs, who are said to own or at least to control the land, preserve their genealogies, and kinship with them is a tribesman's boast. The *Bauré* couple similar attitudes with endogamy: a chief's first wife is supposed to be the daughter of one of his peers; and successors are limited to her offspring. A veritable class system is reported for the *Paressí;* the head of a household lords it over a body of dependents, who are obliged to build his huts, do the farming, fetch firewood, and yield whatever they may earn.

Such a caste system develops most readily through war. So long as prisoners are taken only sparingly, they are likely to be absorbed into the community of their captors, but as soon as it becomes a regular practice to keep enemies, as is said to have been the *Omagua* custom, servants are set off as a body against their masters. The complexity of Panamanian society was partly due to this factor. Prisoners of war constituted a class of slaves with several subdivisions, such as the chief's litter-bearers, ordinary slaves, domestics, berdaches. A slave bore his master's property mark, being branded or tattooed, and often had a front tooth knocked out as a status badge. A new chief generally at once adopted a distinctive design to be "worn like a livery by his slaves and vassals." He and his wives had the prerogative of traveling in litters and lived in great luxury. Under the great chiefs was an aristocracy, composed of distinguished warriors whose title was passed on to their sons but on condition that they, too, devoted themselves to warfare. The relative population and standing of the commoners—above the slaves, but below the nobility—seem to be unknown (Lothrop, 1937 a, pp. 22–24).

In the Chaco, the equestrian *Mbayá* as described by Sánchez Labrador (1910) in the 19th century stand out in sharp relief against such unstratified people as the *Chorotí*. Even the *Mbayá* commoners had three or four slaves each, originally recruited from war captives, whose duty it was to till the soil, fetch firewood, cook, and perform other menial tasks while their masters hunted, fished, and made war. Notwithstanding their economic exploitation, however, the slaves were well treated. The *Mbayá* proper had several grades, the hereditary nobility being itself subdivided and ranking above those ennobled commoners whose titles could not be transmitted to their children. Below these were the far more numerous warriors and ordinary freemen, whose precise status is not clear. The upper classes were described as inordinately vain of their superior rank, outwardly indicated by tattooed or painted designs, and the trend was toward endogamy. An obviously similar pattern (without slaves?) prevailed among the *Tereno*, who recognized three distinct classes—chiefs, warriors, and "camp-followers." Here endogamy is said to have been safeguarded by severe penalties. A warrior could be elected to a chieftain's station, and a camp-follower who had killed many enemies was able to rise to the warrior's grade.

The *Mbayá* polity, however, was complicated by a curious relationship between them and their agricultural neighbors, the *Guaná*. In contrast to war captives, who formed an unequivocally subordinate caste, the *Guaná* never regarded themselves as inferior to the *Mbayá* rank and file, but only to the chiefs. The probably too simple explanation offered is that *Mbayá* chiefs by marrying *Guaná* women of rank had automatically gained control over their wives' subjects. In consequence, a particular group of *Guaná* (=*Niyolola*) would come to recognize an individual *Mbayá* chief as their overlord without assuming an absolutely inferior status. The chiefs visited their *Guaná* subjects' settlements at harvest time and collected "tribute." As a matter of fact, the terms sometimes used to indicate the relationship, such as "slaves" and "homage," are singularly inappropriate; it is more aptly characterized as symbiotic by Herbert Baldus (1939, pp. 121–123). Early accounts picture the *Guaná* "slaves" as remarkably independent, in fact, as sometimes voluntarily entering the services of a *Mbayá*, and the account of an overlord's visit where they "reciben el pleito homenaje de sus criados (receive due homage of their servants)" is curious beyond words (Sánchez Labrador, 1910–17, 2:267 f.). These strange "servants" entertained their masters during a 3 days' annual stay, did not hesitate to ask them for knives and other articles of value—indeed, a *Mbayá* lady would willingly present her most highly prized gewgaws ("sus más estimadas bujerías") to her host's wife. If a request were not graciously granted, these "serfs" clandestinely appropriated what they could, and their masters, instead of meting out punishment, were content to let their "servants" retain the stolen goods, merely indemnifying themselves by declaring with patrician disdain that the *Niyolola* were thieves ("son unos ladrones"). Evidently the bond between the two groups savors of some sort of trading relationship. Baldus is certainly right in denying that it belongs in the same category with that between the *Mbayá* and their slave caste.

It should further be clear that although war captives have unquestionably yielded a subordinate caste the finer distinctions among the *Mbayá* above the slaves is not due to conquest of weaker peoples, a remark that holds equally for the Panamanians and other comparable instances.

Finally, some mention must be made of the *Macú*, not to be confused with the *Macu*, a small tribe of traders found by Schomburgk and Koch-Grünberg (1923 b) along the middle course of the Aiarí River, west of the Rio Uraricuera. The *Macú* are nomads of the upper Amazon and Rio Negro country with a culture inferior to that of their neighbors. The designation seems to be a blanket term, as lacking in precision as the North American "Digger Indians." At all events, their position, though probably always humble, is not uniform. On the Caiarí River they live wretchedly enough, but are summoned for special jobs, such as repairing a boat, for which they are compensated as day laborers. On the Tiquié River, however, they are literally slaves obliged to render all manner of domestic services, to supply their masters with game, fish, and vegetable food, and to prepare coca. *Tucana* men claim access to *Macú* girls, and in cases of death supposedly due to sorcery the *Macú* are likely to be made the scapegoats; the alleged male culprits were until recently killed, their women being abducted to be sold to White slave-traders. Nevertheless, in general their treatment is not harsh, rather suggesting that meted out to household animals (Koch-Grünberg, 1923 b, pp. 175 f,. 335).

The coordination and subordination of heterogeneous groups have evidently been carried out along a number of distinct lines by the South American natives.

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# PROPERTY AMONG THE TROPICAL FOREST AND MARGINAL TRIBES

By Robert H. Lowie

The property concepts of primitive peoples often differ radically from ours. There is often collective ownership of utilitarian goods, and even when individual rights are acknowledged in theory they may be overshadowed by moral obligations of sharing with kindred or neighbors. On the other hand, objects that seem trivial from our point of view figure precisely as those which for the Indian are important enough to establish the basis for differences in wealth. In short, we must at every step envisage the law of property in the perspective of the total culture. With this initial caution, we may group the data under the familiar categories of Real Estate, Chattels, Incorporeal Property, and Inheritance.

## REAL ESTATE

Land is generally conceived by the Indians as something inalienable; any report of their selling and buying it under aboriginal conditions is suspect. Further, major tracts are at least most commonly held by a social group, the individual merely acquiring possessory rights over the section he uses. Among the *Cubeo*, where the clan coincides with the political unit, its headman and council divide the communal territory among adult clansfolk, who acquire property rights for their families in particular plots only after expending labor on making clearings and planting there.

However, the group owning land or values connected with it on a larger scale is not always the same in character. It may be a dialectic division, a patrilineal band, a tribe, a moiety, or a men's society. Among the *Yahgan* it is each of the 5 dialectic groups that claims a definite district, but since much of these people's time is spent on the water their interest in landownership is less intense than with the neighboring *Ona*, whose 39 patrilineal bands jealously guard their respective domains, held by mythological sanctions. Each range was marked off by natural topographical boundaries. Both Fuegian tribes allow encroachment in cases of real necessity and also when a whale is beached by some lucky fluke. The latter windfall creates a superfluity in which all fellow *Yahgan* or *Ona*, respectively, are free to share, and with it comes the rare opportunity of having large assemblies of people in one spot over a space of weeks, hence the chance to celebrate a major festival (Gusinde, 1937, p. 962). Among the *Tehuelche* the several bands claimed each a district and regarded trespass as a fighting matter (Musters, 1871, p. 177). Correspondingly, the *Botocudo* hordes guarded their respective bailiwicks by means of sentries stationed at the border (Saint-Hilaire, 1830–51, 2: 159), a procedure similar to that of the *Northern Maidu* in California. Farther north, the *Yaruro* bands are credited with specific hunting grounds. In the Juruá-Purús region each family is said to mark off the grounds it claims by setting bunches of animal hair in the cleft of a stick along the paths. The *Sherente*, whose sense of solidarity was wider than that of most Brazilian Indians, did not allow any property to the single village, but recognized a certain tribal domain. On the upper Xingú the tribe figures as the major landowner, territories being marked off by watercourses; the *Nahukwa*, e. g., occupy one bank of the Kulisehu River; the *Mehinacú*, the other (Steinen, 1897, pp. 116, 284). Of course, a tribe is sometimes limited to a single settlement, as in the case of the *Canella* of Ponto village. In other cases the settlement, such as the *Tucano* maloca, asserted rights over a definite tract. Even when, as among the *Taulipáng*, communal rights were not so rigorously delimited, the people would hesitate to stray more than a few days' journey from their village, being restrained by distrust of their fellow *Taulipáng* in other localities and by the fear of being penalized by sorcerers (Koch-Grünberg, 1923 a, 3: 92).

It is possible for distinct social units to exercise each a distinctive form of sovereignty. The sparse pieces of ground that permit the growing of quinoa are regarded by the *Chipaya* as tribal property, the total area of 1 km. by 300 m. being divided into strips about 300 by 10 m. each for annual redistribution among the several families. But the pastures nowadays required for sheep and pigs are allotted on a different principle, for they belong to the moieties, whose respective shares are separated by boundaries. If the beasts of one moiety encroach on the other's territory, they are instantly slaughtered and consumed by the aggrieved party (Métraux, 1934, p. 193 f.).

To sum up, the total domain for economic exploitation is collectively owned, most commonly by a local group (band, localized clan, tribe), but sometimes by other units. In non-Andean South America the chief cannot as a rule be said to exercise sovereign territorial rights. He may act as a supervisor (*Yagua*) with power to grant outsiders temporary fishing privileges (*Cubeo*), but he no more than any other individual freely disposes of the soil. The *Chiriguano* chiefs are far from mere figureheads, but though declared to own the land in certain districts the statement is at once qualified with the significant addition "not for their own interest, but on behalf of the tribe" (Nordenskiöld, 1912 a, pp. 230, 232).

Within the limits of the generally recognized range of jurisdiction individuals or families are permitted to hunt, gather, fish, plant, and build at will. A Barama *Carib* may thus be said to own his house and his fields. The extent and manner of such individual claims, however, are often modified by coexisting institutions and ideologies. Among the *Sherente*, e. g., the men's associations are, apart from other functions, economic corporations. An individual may choose a spot to be cleared, but his society performs the task of deforestation, later aids in weeding and foresting, and has at least a moral claim to the aftermath of the maize crop. Again, any joint hunting party, even if numerically insignificant, will distribute their kill among fellow members. Perhaps still more significantly, the two most important wild plant species of the region, the burití and the babassú, both palms, are not free for general use, but belong to the four associations, none of which ventures to trespass on another's stand of trees without danger of a fight.

Whereas the *Sherente* men own the fields and houses, the matrilineal *Canella* and *Apinayé* recognize an indisputable feminine proprietorship in both. As regards the dwellings, however, this can hardly be conceived as individual: it is rather a corporation of kinswomen—say, a grandmother with her daughters and daughters' daughters—that is in control. Further, the males associated with this group continue to frequent their maternal homes, where their position is far more secure than that of their brothers-in-law. Like their *Hopi* brethren in Arizona under corresponding circumstances, they seem to have a moral claim to being sheltered by their matrilineal kinswomen even though no amount of labor expended on a house can ever give a *Timbira* male a claim to legal proprietorship.

A curious limitation of individual feminine rights over cultivated fields is imposed by the *Apinayé*. A couple of men, one from each moiety, assume magico-religious charge of the plantations from the first sowing until they publicly announce the maturity of the crops. In the meantime they pray for a good harvest, plenty of rain, and freedom from insect pests, also supposedly promoting the growth of the plants by songs and magical acts. Any woman who dares remove a single sample from her plot before the official signal is at once punished by the two officials, who break utensils in her dwelling and flog or gash her if she has not taken to her heels (Nimuendajú, 1939, p. 89 f.).

Ownership of houses and plots must be viewed not according to abstract principles of law, but according to associated ideologies. In some instances there is a clear-cut connection between a proprietor and his property: when a *Cubeo* headman dies, the communal dwelling of which he is reckoned the owner is deserted and his garden is no longer used. In a great many tribes death nullifies property rights in a different sense. Among the Barama *Carib*, anyone's death in the house leads to its abandonment along with that of the clearing in which it is situated (Gillin, 1936, p. 116). It is tempting to conjecture that as dwellings increase in complexity the natives will recoil from the inconvenience resulting from such change of domicile, but this hypothesis is only partially true. The *Cayapa*, e. g., reoccupy a house if only an infant has passed away, but the demise of any important member of the family, i. e., any of the older inmates or even a favorite child, is followed by removal. This is no small matter, for the cutting and adzing of the long, heavy hardwood posts is a major task. Moreover, when the family home is suddenly deserted, the inmates have to put up a temporary shelter while the new structure is in process of erection or must crowd into some relative's house. If the new site is at some distance, this further implies the making of new clearings. In short, practical utility is here overridden by ideological motives (Barrett, 1925, p. 332 f.).

There are, of course, contrary instances, for tribes naturally differ in the precise balancing of contradictory urges, and their responses may even differ in different periods. According to Fejos, the *Yagua* do not now abandon a maloca even after a chief's death, but only when the men's council decides that too many persons have been interred under the floor of the maloca. However, Orton about 75 years earlier learnt that after a burial the house was set afire (Fejos, 1943, pp. 23, 80). The *Yecuana*, like contemporary *Yagua*, are not deterred from remaining in their abode by a single death, but if there are several successive deaths the settlement is shifted, possibly at the distance of an hour and a half's journey. During Koch-Grünberg's visit such an event occurred, and because of an epidemic there was danger of a second migration (1923 a, 3: 376).

However this may be, fear of the spirit or a vaguer sense of uncanniness or merely the desire to get away from scenes that recall the mourned person frequently leads to evacuation of both huts and plantations. The neighbors of a bereaved *Caingang* family at once give up their settlement to pitch hastily erected lodges in the neighboring woods; and the immediate mourners cut and burn up all the dead person's maize plot, since to partake of the crop would cause a tribesman's death (Manizer, 1919, p. 783). Desertion of the hut is reported from such diverse peoples as the *Botocudo* (Weid-Neuweid, 1820–21, 2: 56), *Purí* (Spix and Martius, 1824, p. 383), *Guaraní*, *Paressí*, and

*Cubeo.* The *Yamiaca* destroyed many of the cultivated plants in the deceased man's fields (Métraux, 1942 a, p. 53). *Yuracare* practitce differs in that it is held proper to harvest the crop of a deserted plantation even though a death is followed by firing of the hut, departure to a considerable distance, and the establishment of new clearings (Nordenskiöld, 1923, p. 39).

What the data cited illustrate is the impermanence of ownership as the result of native superstitions connected with death. Possession of a dwelling evidently has a distinctive meaning when any death precipitates a general migration of the inmates. Supernaturalism produces similar consequences apart from death. During Speiser's expedition, the *Aparaí* of Kopoko deserted their village and took up residence 3 days' journey away because a visionary had seen a giant ounce that threatened to devour all the people if they stayed in their settlement (Speiser, 1926, p. 152). Classical illustrations from another area are furnished by the *Apapocuva-Guaraní*, who, under the obsession of an impending world catastrophe, were constantly migrating during the 19th century at the behest of messianic shaman-chiefs, who promised to guide them to a place of refuge in the form of an earthly paradise revealed to the leaders in visions.

Instability, however, is likewise the inevitable consequence of practical considerations. The technical stage of aboriginal agriculture does not safeguard against a rapid exhaustion of the soil. Lack of fertilizers thus forces the *Aparaí* to shift their plantations every 4 to 10 years and corresponding difficulties arise elsewhere (Speiser, 1926, p. 151 ff.; Koch-Grünberg, 1923 a, 3: 24). Again, the *Canella*, a steppe people, are unable to farm anywhere with their crude implements except in the galería forests within their territory. As the timber in their vicinity disappears, the journeys to their plots grow longer and longer, finally obliging them to resettle near new clearings. After possibly another decade or so they are able to return to their then reafforested old haunts. The *Chiriguano* are, indeed, said to maintain their rights to abandoned plantations, so that fallow land is claimed and inherited years after effective use; such cases, however, are highly exceptional.

Where the primary economic activity is not farming, but fishing, a different emphasis on immovable property rights is natural. Each *Cubeo* clan jealously guards its fishing rights along the river frontages, and where several clans are involved the weirs are opened and shut according to a definite schedule.

It should be understood that in the economic use of land, as well as with regard to other property, deep-rooted ethical postulates often tend to limit assertion of absolute property rights. Thus, as noted, the plea of necessity is accepted by one *Yahgan* group in admitting aliens of another to their territory; on the upper Xingú anyone is free to shoot fish with bow and arrow, tribal barriers to the contrary notwithstanding; and the *Tucano* do not interfere with travelers who hunt and catch fish while traversing their area.

## CHATTELS

Movable property is generally owned by individuals on the principle that one has a right to whatever one has produced (e. g., Gusinde, 1937, p. 977). This fact is attested by various collectors who found it impossible to buy coveted ethnographica, no matter how commonplace, in the rightful owner's absence (Koch-Grünberg, 1923 b, pp. 36, 159).

Several observers emphasize the exclusive rights of women to dispose of their belongings. The tribes in question represent widely divergent status and institutions, including the *Alacaluf* (Bird, Handbook, vol. 1, p. 71), *Aparaí* (Speiser, 1926, p. 160), *Pilagá* (Métraux, 1937, p. 398), *Yaruro* (Petrullo, 1939, p. 201), upper Xingú tribes (Steinen, 1897, p. 285). *Aparaí* women, for example, claim whatever they manufacture and use—carrying-baskets, fans, basketry bowls, and pottery. A husband may temporarily help himself to such belongings but never ventures to sell them without his wife's express consent. Several cases are especially noteworthy. A Barama *Carib* wife controls not only her pottery, dress, and personal decoration, but even the baskets made by men (Gillin, 1936, p. 128); her *Carajá* sister owns houses and boats (Krause, 1911, pp. 323, 325), and among the uxorious *Palicur* a wife will even interfere with her husband's sale of his personal possessions (Nimuendajú, 1926, p. 80).

With striking frequency investigators have also been struck by the fact that even young children are solely qualified to dispose of their trinkets and toys. A *Chorotí* or *Ashluslay* would never give away his child's belongings without asking his consent (Nordenskiöld, 1912 a, p. 35). Corresponding observations hold for the *Carajá* (Krause, 1911, p. 61), and other central Brazilians (Max Schmidt, 1905, p. 316); Schmidt tried to buy an 11-year old boy's mat, but the father refused to dispose of what belonged to his son only. The same attitude has been encountered in Patagonia (Musters, 1871, p. 177) and both of the main Fuegian tribes (Gusinde, 1931, p. 404 f.; id., 1937, p. 969).

As in the case of real estate, however, the claims of the individual may yield to those of official authority but generally a certain reciprocity is assumed as a foregone conclusion. Though the political heads of many tribes, e. g., in the Chaco, perform exactly the same labors as the rank and file, notable exceptions occur even among relatively simple peoples. The *Carajá* chief neither hunts nor works in the fields beyond directing operations, and he attempts to catch only certain species of fish. But such exemption from ordinary tasks is balanced by duties toward the subjects: the chief must support the poor, including widows and orphans, as well as entertain visitors (Krause, 1911, p. 321 ff.) Where chiefs work exactly like common folk, they are, nevertheless, often entitled to gifts of food and drink, which among the *Canella* are likewise due to the councilors. A successful *Macushí* hunter will send part of his kill to the headman. The explorers of the upper Xingú distributed beads among the Indians, who promptly passed them on to the chief, but then it was his recognized duty to treat his people to food and drink on pain of losing their respect.

The moral obligations which hold between chief and commoner are not restricted to this relationship. "In spite of individualism in ownership there is in fact a certain communism in practice" (Gillin, 1936, p. 128). This principle, formulated for the Barama *Carib*, has much wider application and certain natural consequences. A Barama *Carib*, being permitted to borrow from his coresidents, is inevitably better off de facto if he is the inmate of a large household, though his legal rights over property are not increased thereby. It also follows that, notwithstanding the absence of theoretical communism, differences of wealth in our sense of the term are insignificant. Riches may, indeed, simmer down to the possession of pure luxury articles and the holding of prestige-conferring incorporeal property, matters of great importance to the aborigines, but immaterial from a rational economic point of view. The *Carajá* phrasing of the situation is instructive: "A wealthy man has everything—axes, knives, pots; the poor man has nothing. He goes to the rich man and says, 'Give me a pot or an ax.' The wealthy man is obliged to give it to him." The chiefs as wealthy par excellence are expected to distribute their surplus among the poor (Krause, 1911, p. 324). A *Chorotí* who has made an extra fine catch of fish or received useful presents at once shares his good luck with his fellows: "Every object has its owner, but since he is charitable and regards all his tribesmen as brothers, he generously shares with them" (Nordenskiöld, 1912 a, p. 35). As already suggested, altruism asserts itself with special force in respect to the basic conditions of human existence. A *Yahgan* who has shot a seal will divide it into seven parts, retaining two for his household and distributing the rest equally among the five fellow tribesmen present; his wife similarly distributes the mussels she has collected. This obligatory unselfishness does not altogether efface prior rights: When a whale is beached, those who first sighted it hold the privilege of keeping choice slices, of distributing the spoils themselves, or of delegating the task to their appointees. Nevertheless, to all intents and purposes the theoretical claimant derives very little more advantage from his legal status because of the tremendous traditional urge to let others partake of his bounty. (Cf.

Wm. Schmidt, 1937, 1:190 ff.). In view of the widespread South American attitude it is distinctly surprising to learn that the *Yagua* never lend hunting weapons and cooking pots (Fejos, 1943, p. 84).

Altruism is not necessarily restricted to fellow tribesmen or even to Indians. *Taulipáng* hospitality proved veritably embarrassing to a White guest when his hosts pressed bowl after bowl of native dishes upon him and poured out an infinitude of kashiri for his benefit (Koch-Grünberg, 1923 a, p. 115). Similarly, when Von den Steinen's party left Maigéri, the Indians brought their visitors large bowls, prettily woven food baskets, and 16 manioc flat-cakes from as many households; balls of twine were also favorite forms of presents to visitors. Characteristically, the natives expect presents in return (Steinen, 1897, pp. 154, 224, 288). Oddly enough, so simple a people as the *Yahgan* have systematized the practice of gift-offerings. A visitor generally brings fresh meat or a fine hide for his hosts and on parting is likely to receive weapons, raw materials and, if a woman, ornaments and little baskets. Anyone who should fail to offer presents for an indefinite period would become the butt of gossip; and similarly anyone who does not return an equivalent after a reasonable lapse of time is branded as a miser throughout the district. Since it would be a grievous affront to decline a proffered gift, the beneficiary of an extra fine donation is sometimes sorely embarrassed for want of any article of approximately equal value (Gusinde, 1937, pp. 980–982). This institution seems to be quite lacking among the neighboring *Ona.*

It is clear that such mutual property exchange between alien groups can go far toward cementing intertribal relations. A curious variant of the custom binds together several of the *Timbira* tribelets. During a visit the hosts will specially decorate one of their guests, formally present him to the council, and thereby create him their courtesy chief, a great honor that invests him with quasi-consular functions. On a return visit the former hosts go to this champion of their interests, who is expected to find quarters for them in a house owned by his kinswomen and to board them. In 1931 the entire body of these honorary chiefs numbered 34 among the *Canella;* they are called King Vultures and share certain ceremonial rights of active tribal chiefs. Generosity towards their electors is a primary duty of the King Vultures; they must give presents to the group that chose them and are expected to conform to the highest *Timbira* standards in their general behavior. On the other hand, they share with other officers of the honorific order of "hamrén" claims on the first part of the kill when hunters bring in a large game bag. Notwithstanding their enhanced standing and the prerogatives attached thereto, many King Vultures find the associated obligations so burdensome that they abdicate according to a fixed procedure (Nimuendajú, 1938, pp. 67–71).

Intermediate between individually and communally controlled possessions are those belonging to a family in the narrower sense of the term. Thus, a *Yahgan* canoe is made by the man, but propelled and tended by the woman, so that neither is entitled to exclusive ownership, which may be said to be vested in the group composed of the father, mother, and children so far as they are still with their parents (Gusinde, 1937, p. 972). Here, as in many other cases, the individual family forms at the same time the economic unit. Different arrangements may result in complications of property law. Thus, the *Macushí* families have each its own plantation and crop, but the processing of vegetable food—the preparation of flour, cassava bread, and festive beverages—requires implements used by all members of the community, hence stationed in a central hut or in the middle of the common residence (Kirchhoff, 1931, p. 106). It is *Cubeo* practice to have cooperative labor on objects like canoes or weir screens, which are difficult to manufacture, and to have the whole clan share in their use. Manioc ovens are likewise used by anyone in the house.

Property marks occur in the Chaco. Sheep are shorn in distinctive fashion and indicate the owner, and for the same purpose the *Ashluslay* mark their cloaks with designs. It is, however, possible that the idea has been copied from White men's horse brands (Nordenskiöld, 1912 a, p. 35 f.).

As already suggested, the aboriginal point of view often stresses the value of nonutilitarian objects, so that sheer luxury articles according to our standards assume an inordinate importance. Ceremonial regalia and other decorative property correspond to our pearls and diamonds. Thus, a complete *Cubeo* dance costume is reckoned the equivalent of the bride-price. *Bororo* women specially prize certain neck ornaments, which are passed down from a grandmother to her daughters and granddaughters. The prestige derived from the possession of these heirlooms thwarts an ethnographer's efforts to buy them for even incredibly high prices (Lévi-Strauss, 1936, p. 277). In some instances labor expended on the production of a decorative outfit indicates the importance attached to them. One *Chacobo* youth was seen wearing a neck and chest ornament composed of 1,506 front teeth of a particular monkey species, implying that he had killed 189 monkeys in order to attain his wish, not counting the work of trimming the edges with red toucan feathers (Nordenskiöld, 1923, p. 94).

As in North America, persons ostensibly owning ceremonial emblems may turn out to be mere custodians, the actual proprietorship being vested in the community or its representatives. Though the dance regalia of the *Kejara Bororo* are scattered over the settlement, only the chief has the right to settle on their sale, and he rarely decides to do so without the support of his confidant and the heads of the clans

(Lévi-Strauss, 1936, p. 284). For corresponding reasons Koch-Grünberg (1923 b, p. 190) found it extremely difficult to buy *Tucano* dance regalia: they were considered communal property, the individual holding them being merely a keeper who was not qualified to dispose of them without general consent. Ordinarily, the ethnographer is able to obtain only isolated pieces that happen to be heirlooms in individual households or to get the complete outfit from a chief whose settlement has broken up.

The stock in trade of a medicine man can be classed under the head of chattels when viewed as tangible objects or as incorporeal property insofar as a vision or other supernatural sanction copyrights their use. Widespread shamanistic possessions of a material nature include gourd rattles, carved wooden stools, plant emetics, and crystal rocks, which latter are constantly worn or carried about for use in curing practices. All of them are typical of Guiana (Koch-Grünberg, 1923 a, pp. 195 f., 208, 210 f.). The *Apinayé* recognize a vast number of medicinal plants as antidotes against illness springing from the shadow-souls of plants and animals which have pathogenically intruded into the patient's body. Such remedies are not restricted to the shamans. As a matter of fact, a newborn infant's grandmother at once stores his navel cord in a little basket together with other medicines; if the child suffers from some eye trouble, a little of the navel cord is scraped off, the scrapings being then mixed with water and used as a lotion. Other contents of these receptacles include porcupine quills as a cure of snake bites, neck pendants with snail shells against the jaundice, the root of a forest shrub to provide an infusion against catarrhs and stomach ache, and a host of others (Nimuendajú, 1939, pp. 102–105, 146 f.).

Slaves form a special class of chattels, whose social significance is discussed in the article on Social Organization. They generally originate in warfare, though by no means all tribes made a practice of keeping captives. The motivation for the custom varies. Whereas in some cases prisoners taken in warfare are impressed into economic service so as to constitute a veritable lower caste (Panamá), the *Tupinamba* waged war mainly to capture enemies for ceremonial slaughter and consumption (Métraux, 1928 b). The *Carajá*, on the other hand, generally engage in fighting in order to steal the wives and children of their enemies, the adult males being killed. The prisoners are subjected to slave labor, the women being further conscripted as sex-mates for *Carajá* bachelors (Krause, 1911, p. 320 f.).

### INCORPOREAL PROPERTY

Though rarely so labeled, incorporeal property exists in many forms, even among the simpler South American peoples. This should be obvious from the fact that this category logically includes any exclusive privilege, whether held by single persons or a group. Thus we have to reckon with the prerogatives of chiefs and shamans, but also with those of organizations, favored hereditary classes, and men as opposed to women. The right to eat human flesh, open to both sexes among the *Tupinamba*, was reserved for *Witoto* males, hence is part of their incorporeal property (Preuss, 1921–23, 1: 160). Similarly, the knowledge of secret ceremonials, wearing of masquerade costumes, use of a clubhouse, or playing of sacred flutes falls under this head if the female sex is barred on principle from taking part in relevant activities. It is inessential whether or not the privilege in question finds embodiment in a tangible way, for what counts is not owning the object, such as a mask, but the privilege of making and using it.

Every *Bororo* treasures feathers for use in dances, but the method of using them and the very techniques of manufacturing ornaments from them are linked with particular clans, and the chief alone holds the monopoly for making the crowns worn by leaders in the ceremonials. That one clan should arrogate to itself an ornamental style appropriate to another is hardly conceivable for these Indians. The Caterpillar people, e. g., glue red feathers on their ceremonial bow-staves, whereas the Porcupine clansfolk have a specific fashion of alternating bands of different color and length on their articles. Even the pennantlike wings projecting from the penis-sheaths worn on special occasions, though all painted in black and red colors and trimmed with white down, differ according to clans in the arrangement of these elements and in superadded features. Thus, the Tapir clan pennant bears in the center a red puma figure (one of the linked "totems" of the group) and that of the "Chief" clan is cut out at one extremity into the semblance of an alligator. Similarly, an ornamental pendant of armadillo claws bears the symbol of the clan, which is indicated by the color of the central cotton fringe as well as by the number and shape of the mother-of-pearl fragments inlaid in a rosinous matrix. Not only the clans, but the dual divisions hold distinctive prerogatives, only the chief's moiety being entitled to make the bull-roarers which play so important a part in *Bororo* festivities (Lévi-Strauss, 1936, pp. 278, 284, 288–296).

Incorporeal property is also amply developed among the *Ge*. The four *Caingang* sections—subdivisions of their moieties—are distinguished by their painted facial patterns, say, a small circle in the middle of the forehead; the five subdivisions of the *Aweicoma* correspondingly differ in their body paint (Nimuendajú, 1914, p. 373 ff.; Henry, 1941). Among the *Apinayé* red and black paint normally characterize the Kolti and the Kolre moiety, respectively; and village chiefs are always Kolti (Nimuendajú, 1939, p. 21). Most of the social units into which the *Canella* are split have particular stations which they take up on festive occasions and exercise peculiar rights and functions; the two Rainy Season moieties, e. g., are contrasted by the application of red and black pigment, respectively, and the logs they carry in races are colored accordingly.

*Sherente* individuals, clans, moieties, age classes, associations may all be credited with incorporeal property. Precisely as in North America, a visionary may acquire from his supernatural patron chants, styles of decoration, and material objects, such as a box enabling him to stave off a world catastrophe and to shorten a solar eclipse. Articles thus obtained should be handled only by the original beneficiary, though in exceptional instances he may convey them to a brother or son; since, however, there is a belief that transfer hastens the visionary's death, he is likely to make the transfer only when his end is approaching. True visions are restricted to the male sex. The clans of this tribe are largely connected with the preparation of ceremonial adornment, most of which is manufactured for either moiety by one of its three original clans. Members of one clan have the most extensive tonsure used in the tribe and wear a red cotton cord on the forehead, and deer or tapir hoofs hanging down the back. Again, although any one may play with balls made of maize husks, only the Prasé clan is entitled to throw balls of rubber enclosing a core of dry grass. The moieties, though sharing black body paint, differ in their designs—series of horizontal lines as against series of circles. In worship, the moiety residing on the south side of the village is linked with the sun, the northern complement with the moon; and an individual communicates with the god and the spirits subordinate to him that belong with his moiety. As to the age classes, each of the bachelors' grades owns a form of hair sheath and of body paint peculiar to it. The associations, apart from the material possessions noted in a previous section, hold special sites within the village circle, and also names (to be discussed presently), and one of them had the privilege of forming the vanguard on the march or in battle. To these manifold prerogatives might be added the right to diverse emblems or to special treatment accorded to various dignitaries and their wives (Nimuendajú, 1942, p. 17 f., 21 f., 57, 76, 87 f., 100).

Incorporeal property is further exemplified by sacred spells, songs, and other possessions of magico-religious nature.

A Barama *Carib* shaman carefully "guards the proprietary interest" in his incantations, which are regarded as peculiar to him, being either revealed in a trance or invented by himself (Gillin, 1936, pp. 171, 175); the chant taught by a spirit during the medicine man's novitiate serves to summon it on subsequent occasions. Certain appurtenances of the office, notably the rattle enclosing pebbles that represent the shaman's familiars, are, of course, material objects, but the right to use them seems distinctive of the trained medicine man.

Similarly, the full-fledged *Yahgan* yekamush is distinguished by a special type of feather decoration, and because only men are allowed to wear it, no woman, even though practicing sorcery, is reckoned as in the fullest sense a shaman. The definite call to office consists in receiving the gift of a chant from one's supernatural patron, and when a tyro spontaneously intones such a song he is recognized as a potential practitioner who will be qualified by several months' training under an experienced professional. Subsequently when a party of *Yahgan* plan a hunting trip on the water, it is the shaman's prerogative to lure the spirits of the game animals by intoning a certain tune. Other privileges relate to the treatment of the shaman's corpse, which unlike that of common folk, is painted red all over and adorned with his distinctive feather diadem (Gusinde, 1937, pp. 1151, 1386, 1389, 1407 f., 1469).

The significance of songs appears clearly among the *Apapocuva Guaraní*. Usually acquired in a dream of some dead kinsman, they are all regarded as sacred, and their possession and nature determines social standing. Young people lack songs, hence are regarded as uninspired; adults of either sex have songs for private purposes; medicine men or women, possessing more of them, are qualified to lead in the dances; but the highest grade is reserved for the owners of the most sacred chants, who direct the principal ceremony and act at once as chiefs and shamans (Nimuendajú, 1914, p. 336 ff.). A *Mataco* acquires exclusive rights to sing a song by dreaming about some singing bird and remembering its tune (Métraux, 1939, p. 99). *Carajá* songs and dances are at least in part invented by individuals, who transmit them in their family lines; "others know them, but do not execute them" (Krause, 1911, p. 318).

Under this head may be further mentioned the magical formulae reported from the *Taulipáng* and also in less pretentious form from the *Aparaí* and *Jívaro* (Koch-Grünberg, 1923 a, p. 219 ff.). Their purpose is to drive away disease by reciting spells of the appropriate character. That is, the declaimer refers to animals assumed to stand in a special relationship to the ailment to be removed. Such formulae are rarely uttered except in the bosom of one's family and are not readily communicated to Europeans. Some of them are prophylactic. There are likewise evil charms which cause illness. All recitations are supposed to be preceded by the telling of a brief myth.

Names constitute a particularly important category of property. South American Indians share the common primitive reticence concerning them. The *Taulipáng* suppose a name to be intimately linked with the bearer and hardly ever employ it. The owner certainly will not pronounce it, but is somewhat less reluctant about nicknames, and does not mind at all uttering appellations bestowed on him by Whites. Corresponding attitudes occur among the *Yecuana.* However, the personal names are not necessarily inalienable; they may be exchanged as a mark of mutual affection and, in some tribes are altered in order to escape the wrath of spirits (*Tupinamba*) or after the killing of a brave enemy whose name is then assumed (*Island Carib*). To Whites the *Guaraní*, too, do not divulge native names, which are considered a kind of souls and are changed in case of illness in order to separate the disease from the patient (Koch-Grünberg, 1923 a, pp. 140–147, 363 ff.; 1923 b, pp. 117, 311; Nimuendajú, 1914, pp. 300, 304 f.; Métraux, 1928 b, pp. 103 f.; Roth, W. E., 1915, pp. 306, 345). In the upper Xingú area, as among the *Palicur* (Nimuendajú, 1926, p. 83), there is very little disinclination to uttering masculine names, but Von den Steinen (1897, p. 289) failed to get any feminine ones. The *Yahgan* call a child after the place of his birth, altering the name at his initiation according to the site of the festival, and dropping it after the death of a namesake. Persons born in a canoe receive a special appellation indicative of the fact and are distinguished from one another by nicknames (Gusinde, 1937, pp. 730, 950).

Names are not always the property of individuals, but may belong to social units as well. Even if the connection is not formally crystallized, it is indicated by the bestowal of some ancestor's name, as among the *Pilagá* (Métraux, 1937, p. 194). The five *Aweicoma* subdivisions have each a set of personal names (Henry, 1941). *Sherente* moieties own distinctive sets of masculine names, which are passed on from grandfather or great-uncle to grandson and great-nephew. On the other hand, feminine names, oddly enough, belonged to the men's associations, which conferred them according to an obscure principle somehow connected with the society of the girl's father. The *Apinayé*, who lack comparable men's organizations, vest ownership of all personal names in their moieties. Ideally the transfer is from maternal uncle to sister's son and from maternal aunt to sister's daughter, but sometimes the mother's maternal uncle, the maternal grandmother or her sister, or the mother's adoptive sister are the name-conveyors (Nimuendajú, 1942, pp. 17, 43 ff., 52 ff.; 1939, pp. 22 ff). With the *Canella* only boys obtain their names from matrilineal kinsmen, girls getting theirs from patrilineal female relatives. Theoretically, a man bestows his names on his sister's son and she in return gives hers to her brother's daughter; but in the absence of appropriate recipients of the proper sex, substitutions are allowable, but always on the principle of reciprocity so that the male name-transferrer must have a daughter to whom a patrilineal kinsman of hers can give her set (Nimuendajú and Lowie, 1937, p. 569).

The importance attached to names appears from the frequency of *Ge* ceremonies connected with the bestowal of names. It is further demonstrated by the social consequences of bearing a given name. Thus, the *Apinayé* distinguish between "little" and "great" names, the latter imposing specific ceremonial rights or obligations on the bearer or his kin. For example, men called Vanmè and Ka'tám, each representing one of the moieties, have the privilege of first shouldering their team's log in a log race; the girls Amdyí′ and Kokō′ serve as female auxiliaries in the youths' initiation; and Panti's father is obliged to start a special plantation in order to provide a feast for the people. Among the *Canella*, names determine membership in one or the other of the agamic Rainy Season moieties, in the masculine plaza groups, and in certain festive societies. Finally, a *Bororo* personal name determines into which clan or subclan the bearer is to marry.

## INHERITANCE

Many tribes have no rules of inheritance because virtually or even literally no legacy remains. This extreme is illustrated by the *Yahgan*, who make a point of destroying the deceased person's possessions, including his dwelling. Eager to obliterate all possible mementos that might recall the dead and renew the sense of their bereavement, the mourners cast a man's spear into the sea or burn up a woman's paddle. If there were other facilities available for transport, a widower has even been known to annihilate his wife's canoe. Sometimes, however, these Indians compromised by exchanging valuable implements for equivalents owned by an outsider. The mourner thus evaded the necessity of constantly seeing the actual objects employed by the deceased and yet retained the use of valuable, if not indispensable, tools or weapons (Gusinde, 1937, pp. 1109–1111; Koppers, 1924, p. 158).

Although the Fuegians exemplify a limiting case, annihilation of economic values at a relative's death commonly reduces the heritage, as already explained with regard to habitations. Although the deceased *Mataco's* animals are not killed, all his personal belongings are cremated. His house, too, is pulled down, but its materials are allowed to go into the construction of a new one only 10 yards away (Métraux, 1939, 119 f.). The domiciliary situation of *Cayapa* mourners has already been described. They exhibit some individual variability concerning treatment of chattels, ordinarily keeping one or two articles, yet often the "legacy" is deposited with the burial or destroyed, for a prevalent attitude coincides with Fuegian mentality in trying to get rid of anything that might recall the mourned person to mind.

The sacrificing of material goods is thus not by any means restricted to the simplest peoples and turns up in an exceedingly large number of tribes, though the extent of the self-denial practiced varies. A representative series of illustrations may be cited in support of this statement.

Common *Aparaí* folk are interred, and shamans or chiefs are cremated on a funeral pyre, but in both cases the material possessions of the deceased accompany them (Speiser, 1926, p. 211). The *Tiatinagua* (*Tacanan*) bury belongings with the corpse, the *Yamiaca* (*Southwest Panoan*) go beyond this, also destroying many of the cultivated plants in the deceased person's fields (Métraux, 1942 a, pp. 41, 53).

Whereas in the foregoing cases little remains for distribution among the survivors, other tribes manage to salvage some property for the accepted heirs. A *Siusí* son will put an ax and sundry trifles into his father's coffin, but cling to his most important tools, weapons, and ornaments. The Barama *Carib* desert the dwelling and put food, clothing, and articles of decoration with the corpse, but bows, arrows, and pottery go to the kindred, with sons getting the lion's share (Gillin, 1936, pp. 165, 168). The *Yagua* demolish a dead person's pottery and weapons, but household pottery and minor artifacts remain; dogs are inherited by the son if he is old enough or otherwise by a brother, and pet animals are appropriated by the children (Fejos, 1943, p. 84).

It naturally makes a considerable difference whether or not the house and plantations are retained. *Apinayé* survivors dispose of chattels by depositing them in the grave or use them to compensate the corpse-decorators and gravediggers. Some minor object might remain for the dead person's children. Here, however, the preservation of stable dwellings and of farms modifies the picture; and inasmuch as these forms of property are invariably owned by women, the daughters and other kinswomen of the deceased fall heir to them (Nimuendajú, 1939, pp. 89, 128).

In some cases the coming of Caucasian innovation has altered ancient usage. In the first third of the last century, the *Sherente-Shavante* are known to have buried tools and weapons with the corpse and cremated all residual possessions. In recent times, however, the value set on guns, iron implements, and trade clothes has led the people to give up the traditional practice of destruction, yet no fixed rules of distribution have evolved, so that disputes often arise now. Siblings, spouses, parents, and children are all potential heirs, but, interestingly enough, no one inherits from an uncle despite the fact that both the father's and still more the mother's brother play a significant part in the social life (Nimuendajú, 1942, p. 99). Of great suggestiveness in this context are the data concerning the *Goajiro*, whom 16th- and

17th-century accounts describe as nomadic gatherers, but whose latter-day economy revolves largely about cattle. This comparatively new type of property, along with personal possessions, theoretically passes from maternal uncle to sister's son in accordance with the matrilineal system of the people. However, it is only the man's eldest sister's senior son who ranks as legatee. What is more, a man will deliberately strive to thwart the principle by transferring livestock to his own sons during his lifetime, so that actually few, if any, head of cattle remain for the nephew after his uncle's demise (Santa Cruz, 1941, p. 2).

The disposal of widows constitutes a special phenomenon fully considered in the article on Social Organization. Suffice it to say that the principal types known from other continents are represented, viz, the levirate, filial and, more rarely, nepotic inheritance. The latter, characteristically, is reported from the matrilineal *Goajiro.* In general, however, it cannot be said that the rules of inheritance are very conspicuously related to those of descent. This is doubtless due to the factors set forth above, viz, the material reduction, if not elimination of movable goods; the frequent abandonment of houses and fields; and the impermanence of agricultural holdings.

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# THE COUVADE

By Alfred Métraux

The term "couvade" has been applied both to a symbolic lying-in by the father of a newborn child and to the observance of series of taboos by the father before and after the child's birth.[1] It is only in the second sense of the definition that South America may be considered to be the classic land of the couvade. Since the custom in one form or another is almost universal on the continent, one may surmise that wherever it has not been recorded, as among the *Araucanians*, it existed formerly but died out before it was observed.

In most tropical tribes, both parents refrain from eating certain foods, generally animal flesh, an avoidance usually based on the belief that some unfavorable characteristic of the animal or plant could be sympathetically transmitted to the infant. A great many activities that might endanger the child's life (e. g., hunting, swimming, or the handling of cutting implements) likewise are tabooed for a time after its birth.

The fact that the father takes to his hammock at childbirth need not be viewed as a symbolic lying-in; in most tribes where the couvade has been observed the woman herself is not especially confined and resumes her normal activities a day, or even a few hours, after giving birth. The hypothesis that the husband reclines in his hammock principally because there are no activities in which he is permitted to take part, cannot be dismissed as a mere vagary. In all the literature about the South American couvade there are only two statements that definitely suggested that the custom actually is an imitation of childbirth. Dutertre (1667–71, vol. 2) writes, "The father begins to complain and takes to his hammock," and Yves d'Evreux describes the event:

> He [the husband] lies-in instead of his wife who works as usual; then all the women of the village come to see and visit him lying in his bed, consoling him for the trouble and pain he had in producing this child; he is treated as if he were sick and very tired without leaving his bed as women here keep their beds after childbirth when they are visited and taken care of. [Yves d'Evreux, 1864, p. 89.]

It is not unlikely that the two writers have given us an interpretation rather than an exact description of the custom. Yves d'Evreux himself admits that he had in mind the European pattern of childbed.

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[1] Various observances of the second kind among North American Indians have been called "semicouvade" in anthropological literature.—Editor.

Characteristically, the South American couvade is based on the belief that a powerful bond exists between the father and the child which prevents the former from doing anything that might harm the infant until it is strong enough to stand the strain or avoid the danger.

**Prenatal taboos.**—Among a considerable number of tribes the series of taboos that constitute the couvade begin during the women's pregnancy. Both parents avoid eating or even touching plants and animals with characteristics that, if transmitted to the unborn child, might impair its appearance or temperament. Other taboos serve to prevent a difficult delivery.[2] For example, among the *Pilagá*, a prospective father abstained from eating armadillo meat to prevent breech presentation, tripe lest the infant be strangled by its navel cord, stomach lest it be born wrapped in the matrice, legs lest it be born with deformed legs, and brains so that it will not be born with an open skull. In addition, the father could not carry on certain normal activities, such as saddling or riding a horse, playing hockey, cleaning a pipe, handling a weapon or cutting implement; nor could he use new pots lest the child remain glued to the mother's womb. Some of these restrictions continued after birth, generally until the child's navel cord dropped off.

**Postnatal taboos.**—The observance of postnatal taboos by the father probably is universal in South America; the most common one is abstinence from some food. Cobo (1890–93, vol. 4, p. 175) writes about the ancient Peruvians, "When the women were in childbed, their husbands, and often they themselves, would fast and refrain from certain foods."

Both *Yahgan* parents observed certain food and other taboos for some time before and after a child's birth. Sometimes, especially in the case of the first-born, the father remained quietly in the tent, abstaining from most work, while relatives and friends supplied the family with necessities. Under the same circumstances, *Alacaluf* parents only drank water for 2 days. Among the *Ona*, the father merely kept a light diet. There is no information about the couvade among the *Tehuelche* and *Araucanians*.

An *Abipón* father at first fasted and lay in bed covered with mats and skins and then for some time refrained from shaving his eyebrows, snuffing tobacco, eating capybara flesh, riding horseback until he perspired, tasting honey taken from places in the earth that had been stepped on, and swimming across rivers.

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[2] The *Carib* and *Acawai* gave the following reasons for abstaining from eating certain foods: "The acouri is thus tabooed lest, like that little animal, the child should be meager; the haimara also, lest it should be blind; the labba, lest the infant's mouth should protrude like the labba's or lest it be spotted like the labba, which spots would ultimately become ulcers; the marudi is also forbidden, lest the infant be still-born, the screeching of that bird being considered ominous of death. Both the above tribes and the *Waraus* [*Warrau*] consider it their duty to abstain from venison after their wives are confined, lest the child on arriving at manhood be found wanting in speed, exemplified by the slow pace which the female deer when she has a young fawn at her feet is obliged to observe" (Brett, 1868, p. 355).

The father's confinement has not been reported among any modern Chaco tribe except the *Tereno.* In all tribes, however, the father refrained from eating foods deemed harmful to the infant, and resumed his normal life only after the child had "hardened," that is to say, after 4 weeks.

A *Tupinamba* father shunned game, fish, and salt for 3 days and did no work until the infant's navel cord had fallen off. Infringement of these rules was believed to cause the mother and child to suffer from diarrhea. The father also placed the baby's carrying sling in a miniature trap as if it were game, shot at it with a small bow and arrow, and threw a fish net over it in an endeavor to make his son a good hunter and fisherman. In the same tribe the father of a newborn child lay in his hammock carefully wrapped up so that he would not catch cold and so impair the child's health; during this time he was visited by friends who brought him gifts. As soon as the navel cord had dropped off he could walk about again, though he still had to avoid violent exertions, like felling trees.

The couvade was probably customary among all the *Tupí-Guaraní* tribes, though it has not been recorded among every one in our fragmentary literature about these peoples. After the birth of a child, *Guaraní* fathers idled in their hammocks until the navel cord fell off. During this time they loosened their bows and gave up setting traps, hunting, and the making of tools or weapons. Modern *Cainguá* and *Chiriguano* fathers merely fasted on the occasion of a child's birth; formerly, *Chiriguano* took to their beds. Only in some *Cainguá* tribes of Brazil is the couvade in the strict sense still in vigor. In this respect, the *Guarayú* remained quite conservative; there the new father slashed his skin with an agouti tooth, stained his feet and articulations with arucú, and fasted in his hammock for 3 days.

*Bororo* parents observed food and tobacco restrictions for 10 days or so; during this period they were not permitted to touch their hair with their hands lest it turn white. *Carajá* fathers stayed at home for 6 days; they were not permitted to eat fish or manioc and were obliged to clean their stomach by vomiting every day (Krause, 1911, p. 327).

The *Apinayé* father stayed in bed and abstained from all labor until the navel cord dropped off.

> Both parents speak as little as possible, even with each other, and keep a strict diet on manioc flat-cakes baked according to ancient usage on a hot stone slab [Nimuendajú, 1939, p. 101.]

Immediately after the delivery, *Sherente* parents partook only of white manioc flat-cakes and the milky juice of the babassu palm kernels.

The father could not touch an ax for 3 days (Nimuendajú, 1942, p. 39).

In the Xingú region, the father dieted on cassava diluted with water and avoided all foods that, if eaten by the child, might have harmed it (Steinen, 1894, p. 335). *Paressí* parents remained at home for 5 days; the father ate only cassava moistened with water (Steinen, 1894, p. 434). The *Ipuriná* father ended his fast only when the mother returned from her confinement (Ehrenreich, 1891, p. 29). *Culino* men were not permitted to eat paca or tapir flesh for 3 days after the birth of a child. Meat was also taboo to *Paumari* fathers (Ehrenreich, 1891, p. 51). *Miranha* fathers lay in their hammocks for 3 weeks keeping a diet of manioc flour, certain birds, and fish. *Araua* men avoided certain fish, male turtles, and turtle eggs during their wives' pregnancy and after childbirth.

Among the *Guaques* of Popayán, the parturient was confined to a special hut for 3 months. During that time the husband fasted and carried on no activities. At the end of the period the parents smeared themselves with ashes and genipa. (See Albis, 1934, p. 14.)

The *Catawishi* stopped all heavy work and ate neither game flesh nor large fish for a month (Tastevin, 1925, p. 149).

An *Awishiri* couple rested for 2 weeks in their hammocks, avoided work, and abstained from several foods (e. g., meat); whatever they could eat was prepared by other people (Tessman, 1930, p. 484). Among the *Ssimaku* (*Urarina*) the father shared his wife's diet and shunned every kind of heavy work for a week (Tessman, 1930, p. 506). The same type of couvade is reported for the *Yameo*. Among the *Mayoruna*, the father reclined in his hammock in a compartment of the hut from the moment his wife felt the onset of birth pains; he remained confined with her and observed a strict diet for 20 days (Tessman, 1930, p. 376). The couvade of the *Muinane*, *Bora*, *Cashibo*, and *Campa* consisted only of some food taboos. Among the *Candoshi*, the father remained in his hut fasting and singing; his wife meanwhile went to her parents' home (Tessman, 1930, p. 292). Among the *Pioje* and *Nocaman*, the couvade lasted only for 1 day.

In the Guianas both parents remained in their hammocks until the navel cord had dropped off. Among the *Macushí* they were separated by a mat wall. They ate only cassava cakes and manioc soup and for 3 or 4 months they could not work. Since a man could not use any sharp instrument he had to give up hunting, fishing, felling trees, carving wood, and similar activities. Among the ancient *Galibi*, the new father subjected himself to flagellation and to the bite of venomous ants. Moreover, in several Guiana tribes he was not permitted to scratch himself with his fingernails, but used for this purpose a splinter, especially provided, from the midrib of a cockerite palm (Schomburgk, 1847–48, pp. 313–314). The *Palicur* father was not permitted to cut cipo or drink its sap, cut tauary, or allow game to rot; besides he had to be careful not to fall from a tree lest the child would get a big belly. The father remained with the women for 10 days, during which time he could eat only a little tapir and piranha fish. The mother stayed at home for 2 months and ate only uéua fish (Nimuendajú, 1926, p. 83).

A *Conibo* father did not keep a diet, but could not undertake any heavy labor for 4 days after the birth of his child (Tessman, 1930, p. 214).

A *Yagua* father was confined to his hammock; he was forced to refrain from cutting "any creeping vegetation or touching chambita yarn other than his hammock. He was not allowed to sing or to play the panpipes or drums for a period of 10 days." Until the child could walk, neither parent could eat fish or other river game (Fejos, 1943, p. 71).

Until his child could walk, a *Jívaro* father avoided animal and plant foods containing tsarutama (magic stuff) for, "such foods had power over the spirit of the child and could wreak harm upon it" (Stirling, 1938, p. 111).

Among the *Siusí*, the parents lived in isolation for 5 days without working or washing themselves and ate only manioc wafers and pepper. On the fifth day the maternal grandfather recited a charm and enumerated the foods which could then be eaten (Koch-Grünberg, 1923 a, p. 116).

At the conclusion of the couvade period among the *Cubeo*, the headman of the sib or some other old man charmed all the fish and game so that they could cause no harm to the child; he said, for example, to a spiny fish, "Let no spines lodge in the throat of our little one."

Among the *Island Carib*, the father of a first-born child was confined in a small hut. During the first 10 days he ate only dry cassava and water; later he added some ouican or manioc beer. He ate only the center of the wafers and saved the rest for the feast which ended his fast. He could leave his hut only at night; no one who had partaken of fish or beer could visit him. After 3 months, two shamans took him to the plaza, where he was made to stand on two cassava wafers while they incised his skin with aguti teeth and washed the wound with a decoction of urucú, red pepper, and tobacco. The baby's face was rubbed with the blood to make it courageous. Then the father sat down on a red-painted bench and was offered food as if he were a small child; he could taste only some fish and drink while his neck was supported like an infant's. The shamans distributed the cassava rinds to the crowd, and the father ate the wafers on which he had stood. After this ceremony, the father rested for several days. For 6 months more he refrained from eating turtles lest the child become deaf, parrots lest it have a long nose, crabs lest it get long legs, and many other meats for similar reasons. After the birth of subsequent children, the father only kept a diet for 5 days (La Borde, 1886).

The observance of "couvade" restrictions often have been interpreted by the Indians themselves as an expression of the close bond between the father and the infant's clinging soul. An *Itonama* father never bathed in deep water lest the baby's soul drown; to prevent the soul from following him, the women tied the baby's legs (Nordenskiöld, 1915, p. 112). When a *Palicur* father went to the bush he carried a miniature bow and arrows for his child's soul; if he had to travel in the forest at night, he always hung a cord from his left shoulder for the soul (Nimuendajú, 1926, p. 83).

The reason why a *Carib* father in Dutch Guiana remained at home for a week without working was that the child's body might ache.

> The second week he will go out to the woods, but not too far for otherwise the child gets too tired. If the path divides itself, he will cover up one path in order that the soul of the child will not take the wrong path and lose its way. Near a creek he will not come at all, lest okoyumo, the water spirit, should take his child, and yet during the first 2 weeks the baby is with its mother in a little room especially built for the occasion. She is not allowed to take it out. The father himself has not yet seen it. [Ahlbrink, 1924, p. 223.]

The *Betoya* told Father Rivero (1883, p. 347) that if the father were to walk, he would step on the child's head; if he were to split wood, he would cleave its head; if he shot birds, the arrows would pierce its body.

The identity of father and child is expressed in the name given the infant by the *Bacaïri:* "little father."

This mystic bond between the bodies of parents and children does not cease entirely with the completion of the couvade rites. Among the *Sherente*, for example, married persons of either sex refrained from sexual intercourse when their parents were seriously sick, for they were convinced that it had an unfavorable effect upon the patient (Nimuendajú, 1942, p. 39).

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# BOYS' INITIATION RITES

By Alfred Métraux

Initiation rites for boys or young men are fairly common in South America, but, unlike the puberty rites for girls, they tend to take several different forms and often serve quite different purposes. The age of the initiate is less frequently determined by purely physiological development among boys than among girls. Magic and religious elements occur in all ceremonies, but their function as well as their relative importance varies considerably. In many cases trials and ordeals form part of the rites, but here again there is considerable variation in emphasis and meaning. In almost all cases, the rites have some connection, direct or indirect, with the attainment of adult status, but frequently the same rituals may also serve other purposes.

In the Guianas, the young people acquire adult status when they have been whipped or bitten by poisonous ants, but the ordeal assumes the character of an initiation rite only because it is inflicted for the first time. In itself, the ordeal does not have that significance, for it is a magic rite that is performed on many occasions in life when a man wishes to assure his good luck in an enterprise or needs to purify himself from evil influence.

Practically, all the ceremonial life of the Marginal peoples, the Fuegians, the *Chamacoco*, and the *Ge*, is focussed on the training of the young men and on their admission into men's societies or age groups. Their religious activities pale in comparison to their elaborate initiation ceremonies.

In Perú, boys' puberty rites, unlike those for girls, were not a family affair but were organized and celebrated by the whole community once a year in December. Every boy who was regarded as sexually mature received a breechclout and changed his name. The ceremony was, of course, particularly solemn and elaborate among members of the nobility. The rites have been so frequently described by various chroniclers and have been so often quoted that it would be superfluous to repeat the details here. The ceremonies, which continued over several weeks, included pilgrimages to several shrines, particularly to that of Huanacauri, dances, flagellations, purificatory ablutions and races. The whole cycle of rites and feasts culminated in the solemn giving of weapons and breechclouts to the candidates and in the piercing of their ears. The initiates also took their new names at this time. Thereafter, they were considered to be adults.

**Ordeals.**—In the various tribes of the Guianas, boys who had reached puberty were subjected to a series of severe ordeals which often were intended to give the candidates skill and strength in hunting and fishing.

Among the *Taulipáng*, the boy was first whipped by an old man, generally a grandfather. Then his chin, arms, chest, and ribs were scored with vertical incisions which were rubbed with magic herbs to increase his hunting luck. The arm incisions made him a good archer; those on his chin helped him to shoot his blowgun well. Next a string smeared with magic herbs was passed through his nose and mouth. After these ordeals the young man had to go through the maraké ceremony, in which stinging tocandeira ants (*Crytocerus atratus*) in a meshed basketry frame were pressed against his body. The candidate had to stand the intense pain with a stout heart or the operation was repeated. In addition to these ordeals, the pubescent boy lived for a year on a diet of broth, cashiri (manioc beer), small fish, and birds.

Among the *Aparaí*, a shaman directed the initiation ceremony. The candidates, of whom there generally were three or four at one time, spent a whole day dancing and singing. A frame of wasps, generally in the shape of some animal, was pressed against their chest, back, arms, and legs. Those who succeeded in concealing their sufferings returned to the dancing ground, where, wearing a large headdress and carrying a flute in their left hand and a dancing arrow in the right one, they danced in a line over a board until they dropped from exhaustion. Then they bathed and returned to the shaman who cut their hair, decorated them with bead strings and a shoulder band of monkey hair, and gave them their first loin cloth.

Among the *Rucuyen*, the candidates, when they had been stung by ants and wasps, were lashed in their hammocks (Crévaux, 1883, p. 249).

At puberty, *Warrau* boys slashed their chest and arms with a peccary tusk or a tucan beak and were subjected to the ant ordeal.

The ant ordeal is also reported for the *Tamanako* (Gilij, 1780–84, 2: 347), the *Oyampi* and *Emerillon* (Coudreau, 1893, pp. 228, 548), the *Macushí*, *Acawai*, and *Arecuna.*

South of the Amazon the ant ordeal was practiced only by two tribes, the *Maué* and the *Parintintin*, but there is some doubt whether among the *Maué* the ceremony actually was connected with puberty rites. *Maué* children, expecially those who seemed to be retarded, and young men both were subjected to the painful application. Barbosa Rodrigues (1882) witnessed a ceremony at which a young man plunged his arm into a kind of sleeve bristling with ants and then danced wearing the apparatus. He had to repeat the performance seven times. Martius (1867) reports that boys of 8 or 10 years were stung by ants and that when they screamed and cried they were dragged into a wild dance. The ordeal was repeated frequently until the boys were 14 years old, at which age they married.

When a group of *Parintintin* boys were old enough to discard the small fiber apron worn by little children, they were sent to the forest to prove their skill as hunters. Their return was hailed with war cries and flights of arrows. They were also exposed to the mandibles but not the stings of tocandeira ants. Thereafter they could wear the adult penis sheath.

The martyrdom of the ants and wasps has often been interpreted as a test of fortitude and as a preparation for the hardships of a hunter's life. Actually, it is a magic rite which "refreshes man, prevents him from being slow and lazy, makes him active, wide-awake and a good archer" (Coudreau, 1893, p. 228). Not only pubescent boys but also children and mature and even elderly men are subjected to the maraké. *Carib* chiefs, for example, had to lie in a hammock covered with hundreds of tocandeira ants. Everyone in a *Wapishana* village had to undergo the ordeal when an important visitor came. Shamans used it as a treatment for their patients.

Some other puberty rites also were to some extent ordeals. Formerly, *Palicur* boys were incised on their chest, arms, and legs, and were flogged with a *Bromelia* whip. Afterward they were given bands to wear on their upper arms and knees (Nimuendajú, 1926, p. 84).

During a special ceremony, the *Saliva*, *Guamo*, and *Otomaco* inflicted a considerable number of wounds on 10- to 12-year-old boys (Gumilla, 1791, 1: 118–119; Rivero, 1883, p. 211).

The *Nambicuara* were considered to be full-fledged adults only after they had had their nose and lips perforated.

There is a tradition among the *Tucuna* that in former times young men were initiated when their voice changed. They were secluded and then, after taking a snuff of tobacco powder, were presented formally to the sacred trumpets.

In some cases, the initiation rites may rather be considered a magic inoculation of virtue. The ancient *Cariri* rubbed a mixture of charred fish and game bones and ashes into incisions traced on the bodies of initiates and also compelled them to drink a concoction of the same ingredients. This magic treatment took place at a time when the young men were also receiving practical training in hunting. For 10 days they went out early in the morning to hunt; on their return they gave the game to their elders and contented themselves with maize and cassava. In the evenings they danced and sang until they were utterly exhausted and emaciated (Martin de Nantes, 1706, pp. 12–13).

**Admission to men's societies.**—There is another category of initiation rites that coincides with puberty, but which differs fundamentally from the kind of ceremonies described above. In this category are the rites connected with admission to the cult of the sacred trumpets, which are so important among the *Cubeo* and many *Arawakan* tribes. Among the *Ona* and the *Chamacoco*, the revelation of the true nature of spirits has been combined with initiation rites, but should not be construed as a puberty rite, even though those to whom the mysteries are explained generally are adolescents. Among the *Cubeo*, the age of the initiates varies from 6 to 16.

Initiation rites constitute one of the most important social and religious events in the lives of the *Ona*, *Yahgan*, and *Alacaluf*, in addition to symbolizing the passage from childhood to adult status, they provide the young people with training in arts and crafts, in the traditions of the tribe, and in the ethical ideals that keep harmony within the community. Despite many common features, the rites differ in each of the tribes.

The *Ona* have combined the primitive initiation rites with the kina ceremony, the purpose of which is to terrify the women and keep them in subjection. For this reason they exclude women from the initiation rites, while the *Yahgan* and *Alacaluf* accept them more or less on the same footing as men.

Because of their dual nature, the *Ona* rites were performed along double but parallel plans. The initiation ceremony was organized by old people but was presided over by the father of the oldest candidate. It lasted from 3 to 6 months and took place in a conical hut built near the forest at some distance from the village. The candidates were about 16 years old. (See Handbook, vol. 2, pp. 120–121.)

Among the *Yahgan* and *Alacaluf*, the initiation rites lasted from a few days to several months and were celebrated at least once a year, but sometimes after a shorter interval. The *Alacaluf* held the ceremonies when a whale had been stranded on the shore or after a successful sea lion hunt. Only girls and boys who had reached puberty could be initiated, but all the adults participated in the rites. Among the *Yahgan* each boy was entrusted to the care of two male and one female sponsors and each girl to one male and two female sponsors.

The *Yahgan* rites took place in special huts decorated with painted boards and poles; they were shared by the boys and girls. Among the *Alacaluf*, the women retired at night to their own huts and only toward the end of the initiation period were they authorized to remain with the men on the condition that they would not watch the men's activities.

During the initiation period, the novices slept and ate little, worked hard, and took a daily cold bath. They could drink only from a tube. Inside the hut they sat with crossed legs; the *Alacaluf* beat those who changed their position. Much of the time was spent in learning the main arts and crafts and in listening to moral discourses. Their sponsors exhorted them to be generous, respectful to old people, and to refrain from gossip; their words were presented as expressions of the will of the Supreme Being.

*Yahgan* novices were constantly threatened by a demon who finally appeared to them in the guise of a man but amid frightful yells and strange noises. A traditional element in the *Alacaluf* initiation links it to that of the *Ona*. At a given moment a man disguised as a spirit came near the hut and howled. The novices shouted and beat the walls of the hut to chase him away, but the women showed signs of great terror because he struck whomever he could reach.

*Alacaluf* rites also included comic elements lacking in those of the *Yahgan*. The men played tricks on the women or on one another. The magico-religious aspects consisted mainly in dances and chants that were intended to keep evil spirits at bay. Certain songs belonged to women, others to men.

Toward the end of the period, the sponsors gave their candidate a basket, a drinking tube, and a scratching stick. The final episode was a mock battle between the men and the women.

There are striking parallels between the men's feast of the Tierra del Fuego Indians and the initiation rites of the *Chamacoco*. Here, too, the formal initiation of the boys is blended with the disclosure of the mysteries of the men's feast, but the revelation and the enacting of rites destined to terrorize the women are only the most spectacular aspects and the crowning of a whole cycle of initiation rites. At a time set by the old men of the tribe, two men visited the parents of the prospective candidates to demand them for the initiation. When a mother objected, she was threatened with the intervention of the Anapöso spirits, who would come to take her child by force. So great was the women's terror of these supernatural beings that they readily yielded up the boys. The children were taken to a small clearing where they remained for a month or more in the company of old men. The candidates were not subjected to any ordeal, they were even given abundant food, and therefore the initiation was looked back upon as a pleasant experience. The old men imparted to them knowledge of the tribal lore and taught them proper social behavior; they were urged to act in an adult manner, to abandon their childish ways, to observe moderation in eating, to remain chaste until marriage, and never to fight with other members of the band. Finally, they learned that the Anapöso spirits, whom they feared so much, were only masked men. This revelation was accompied by the warning that if ever they told the secret to women they would be clubbed to death. The Anapöso feast itself took place at the end of the initiation period. The initiates danced, ran, and were visited by masked impersonators of the spirits. Finally, the "spirits" marched toward the village and danced in the presence of the women, who were not allowed to look at them. After the masked dancers had gone, the initiated boys, beautifully painted and decorated with feathers, made their entrance into the village where the women received them with shouts of joy; in the midst of the tumult the initiates maintained a reserved demeanor to signify that they had reached maturity.

Fragmentary evidence seems to indicate that similar initiation ceremonies were held by the primitive tribes south of the Pilcomayo River.

The admission of a young *Bororo* to the men's house was the occasion for a special ceremony. For several days before his reception, the father taught his son the traditions of the tribe and exhorted him to follow them. On the day before, the boy's closest relatives took him to the men's house, where they introduced him to a godfather, a member of the opposite moiety. During this night, the boy was not permitted to sleep, lest he have bad dreams. In the morning, dressed in his finest array, he was placed facing the sun; after several rites the godfather tied up his penis sheath. Then he returned home, where the women lamented as if he were dead. On the same day the chief uncovered to the new member of the men's house the religious secrets of the tribe and began to teach him ritual songs (Colbacchini and Albisetti, 1942, p. 172).

*Age grade membership.*—Initiation rites were also very involved and intricate among the *Northern Ge*, where they were connected more or less clearly with admission into age grades.

Among the *Canella*, the initiation ceremonies did not correspond to puberty, but instead served to determine membership in one of the five age groups that formed an important subdivision of the community. The members of each age group celebrated together a series of alternating feasts which made up a cycle of about 10 years. The ceremonies were begun sometime between the ages of 5 and 10. In the first phase, the candidates were secluded for about 3 months in the maternal hut. The second phase, which also included a period of seclusion, took place 3 years later. After repeating the two sets of rites at the same intervals of time, the boys attained the status of adults and were permitted to marry.

There were very few religious elements in the rituals. In the first phase, the boys were possessed by the spirits of the dead whom they attracted by chants; they acted as if they were the dead and only rid themselves of the spirits by ablution and flagellation. During both the first and second phase, they were exposed to magic rites that ensured their growth and their longevity; at the same time they received instruction about their duties as married men.

When a new age group had been formed it occupied a special place on the plaza, causing the next group to move up and thus effecting a general shift in the position of all groups. The eldest one settled in the center of the plaza and its members became advisers.

Among the *Sherente*, only the members of the akemha society went through the initiation rites. For 3 years the candidates lived away from the village, eating game which they had hunted or food brought by their relatives. Under penalty of expulsion from the group, they were forbidden to quarrel, sing, laugh, or speak aloud. After their seclusion they occupied a hut built by their relatives, bestowed traditional names on little girls, and accepted the symbols of their status from their maternal uncles. Thereafter the boys were said to be shipsa and remained in the men's house until they married.

Though it may seem strange that only members of one of the four *Sherente* societies went through initiation rites, the anomaly may be explained if we regard the akemha, also called the youngest, as one of the age groups to which young people had access after a period of initiation.

Among the *Apinayé*, a new cycle of initiation rites began every 10 years for all the members of the new generation. When the time came, the village old men selected two instructors, one for each moiety, and these in turn designated a sister's son as chief of the candidates in his moiety. During the two periods of initiation, the candidates lived in a camp near the village, where they were assisted by four girls who had inherited this function. The main rites consisted in the perforation of the earlobes and lips. Every evening the boys went in solemn procession to the village to ask for their food, which they ate in common.

During the first phase of the initiation, the boys made the ornaments which they were to wear. During the day they went hunting, and in the evening they sang the four initiation songs and danced special dances. The nights were spent at home. When their hair, which previously had been cut, was long enough to touch their nose, they made spindles for the women of the community to spin the thread for their ornaments. The work was accompanied by various ceremonies. When they had reached this point, the parents assigned godparents to their sons. The final rites of the first phase of initiation took place when the ornaments were ready. The ceremonies celebrated on the occasion included a log race, a parade of the boys, and songs. Large meat pies were eaten by all those present except the initiates. The night was spent standing on a pile of wood; after a few days spent singing and dancing, the ordeal was repeated. They also performed magic rites to get a long life.

An interval of several months separated the second phase of the initiation from the first. The meaning of the very complex rites characterizing the second phase is obscure. Once more the boys moved to a camp where they lived for 6 months learning the rules of the good life. Their teachers stressed particularly the conduct to be observed toward their prospective wives; they were warned to remain disciplined and chaste during the period of seclusion.

Also during the second phase there took place a ball game played according to complicated rules not by the candidates but by their elders. The godparents gave the initiates ceremonial clubs and cut their hair, which had grown during the time of seclusion. The end of the second cycle, like the first, was marked by log races and by the performance of magic rites to ensure strength and long life to the young men.

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# WARFARE, CANNIBALISM, AND HUMAN TROPHIES

By Alfred Métraux

## WARFARE

The two predominant types of warfare among South American Indians coincided roughly with the two principal cultural divisions of the continent. In the high culture area of the Andes imperialistic wars were waged to subdue and occupy vast regions. The more primitive Indian tribes from the Guianas to Tierra del Fuego, on the contrary, raided territories and took loot and captives but, as a rule, they did not seek permanent control over their enemies. Although superficially some migrations may appear to have been wars of conquest or extermination, and therefore exceptional, they were not planned as military expeditions. What happened was that the migrants became involved in rivalries and disputes with the earlier inhabitants and then fought it out until the defeated group was uprooted and cast out, exterminated, or assimilated. The *Carib* and *Tupí-Guaraní* are examples of peoples who swarmed across the continent in this fashion. What Rochefort writes about the *Carib* may well be applied to most Amazonian and Chaco tribes:

> Their aim in war is not to make themselves the masters of a new country or wrench spoils from the enemy; they have as their only purpose the glory of defeating them and the pleasure of avenging on them the wrongs which they have suffered. [Rochefort, 1658, p. 476.]

Several South American tribes have gained wide fame for their warlike character and for their courageous resistance against the Spaniards and Portuguese. The daring and ferocity of the *Carib*, *Araucanians*, *Guaicurú*, and *Chiriguano* have been celebrated in Spanish prose and verse. The resistance of the *Araucanians* and the Pampas Indians ended only in modern times; even recently the *Mundurucú* and *Parintintin* were feared by their Indian neighbors and the White colonists alike. To the present day the *Jívaro* carry on their feuds and retain the bellicose character that once distinguished so many tribes of the upper Amazon.

Hostile relations still prevail in many regions of South America. The *Yanaigua*, who are probably the same Indians as the *Tapiete* of the northern Chaco, have been pushed northward by the Whites and are now engaged in warfare with the *Sirionó* and other tribes of eastern Bolivia. The *Moro* of the southern part of the Province of Chiquitos still attack the *Chamacoco* bands. *Nambicuara* bands are frequently at odds with one another. Bloody feuds mark the relationships between the *Panoan* and *Arawakan* tribes of the Madre de Dios and Juruá Basin. The *Tucano* and *Arawakan* tribes of the Yapura and the Uaupés River attack the so-called *Macú* and subjugate those whom they do not kill. The *Suya* of the upper Xingú River are greatly feared by their neighbors and have shown themselves hostile to travelers. Only in recent times, after many years of enmity, have the *Tapiete* and *Carajá* made peace.

In many South American cultures a strongly integrated system of social and religious values was associated with warfare, and every male member of the group was expected to become a warrior. From early childhood the *Tupinamba* and *Guaraní* boy was taught to become an "avenger," i. e., a man who would capture prisoners and sacrifice them ritually in compensation for all the losses suffered by his tribe at the hands of their enemies. Similarly, *Jívaro* boys are systematically trained for warfare. From the time they are about 6 years old, their fathers daily remind them of their dead relatives and warn them to take revenge lest unhappiness be their lot (Stirling, 1938, p. 51). The *Jívaro* also take young boys on war expeditions so that they may learn first to defend themselves and later to kill men and to prepare shrunken heads.

The European conquest contributed greatly to the strengthening and even to the overstressing of military trends in several societies, for instance, among the *Mbayá* of the Chaco, the Chilean *Araucanians*, and, to a certain extent, the *Carib* of the Guianas.

**Motives for Indian warfare.**—In analyzing the underlying motivations and the characteristics of South American Indian warfare, a distinction must be made between the feuds that affected small communities or extended families and actual intertribal wars. In the former, hostilities often ceased when the attacking group considered that it had exacted just retribution for the wrongs that led them to overt hostilities. Intertribal wars, on the contrary, could be far more severe, and the attackers might even aim to exterminate the enemy (*Jívaro*).

The term "warfare" is perhaps unsuitable to describe the perpetual vendettas between small communities. Observers agree, for example, that warfare as such never existed among the *Yahgan*. Yet when a popular member of the tribe had been killed, his kin felt bound to challenge the family of the murderer; the ensuing fight often ceased before further fatalities occurred. The same kind of mutual murder, one might say, characterized the relations between the small groups of the upper Amazon and its tributaries.

Hostilities between groups were prompted not only by real wrongs, such as murders, the kidnapping of women (*Carajá*, *Jívaro*, and tribes of the Orinoco), and taunts during drinking bouts, but also by imaginary grievances like the suspicion of witchcraft. Indeed in some regions, notably on the tributaries of the upper Amazon, revenge for sorcery appears to have been the principal cause of the feuds between communities. Whenever the death of a member of a settlement could not otherwise be explained, shamans were ready to attribute it to a witch in a neighboring group. The kin then felt obliged to take revenge. This situation has been aptly described by Whiffen, who writes about the Putumayo River Indians in general:

> This state of endless warfare is based not on avarice but on fear. They fight because they are afraid of each other, and see no protection but in the extermination of their neighbors. Every ill that befalls a man they set down to the evil intent of an enemy. Death, from whatsoever cause, is invariably considered to be murder, and as murder it has to be revenged on some suspected person or persons. Hence it follows that blood feuds innumerable are carried on relentlessly. Any and every excuse serves for a fight. If a thunderstorm should wreck a house it is more than sufficient reason for that household to attack another in reprisal of the damage done; for it is to them quite evident that the catastrophe was caused by the magic of some malicious dweller in the vicinity. [Whiffen, 1915, p. 61.]

In certain groups the alleged reasons for hostilities and the enemies themselves were less important than the system of values connected with warfare. Warfare was the principal means of acquiring prestige and high social status; consequently, pretext for wars were eagerly sought, and expeditions and raids were part of the normal functioning of the society. *Tupinamba* men waged war in order to obtain victims for the ritual sacrifices and cannibalism by which they gained prestige in the community. Because of the magico-religious and social factors involved, it was necessary that warfare be maintained with some regularity. When Villegaignon forbade the *Tupinamba* to sacrifice war prisoners, they complained that war had lost its meaning. As a substitute, they disinterred their enemies' skulls and broke them in a symbolic sacrifice so that they might still acquire the new names that were their badges of social distinction.

Even today the greatest aspiration of a *Jívaro* is to become a renowned warrior, for "his reputation increases in proportion to the number of heads he has succeeded in securing during his career" (Stirling, 1938, p. 50).

Wars were also fought for economic reasons. Trespassing on hunting grounds (Chaco, *Ona*), violations of fishing rights, and, in post-Columbian times, the theft of cattle or horses were among the most common reasons for raids. Sometimes wars or feuds resulted from unsuccessful trade relations. Among the *Nambicuara*, whose bands customarily exchanged goods with one another, no bargaining or discussion of the transactions were permitted; nevertheless, those who felt they had been worsted bore grudges that some times led to fights.

Looting was a primary motive for Indian warfare only in those regions where a poor and primitive group was in occasional contact with richer people, whose goods they coveted. Nomadic tribes always were ready to plunder the crops of their agricultural neighbors. The *Guaraní* and the Indians of the Montaña warred against the peoples of the *Inca* Empire to obtain loot. Many Indians who were in contact with Whites and who acquired goods from them were exposed to constant raids by tribes who could not otherwise satisfy their desire for iron tools and other European articles. Some tribes attacked White settlements for the same reasons. For 200 years an important motive of *Araucanian* warfare was the theft of cattle herds and the sacking of European settlements. The sons of *Araucanian* chiefs of Chile went to the Pampas to get rich quickly by this means, after which they returned home to marry.

The desire to capture women and children also gave rise to warfare. Although slavery was poorly developed in pre-Columbian times and war prisoners rarely were exploited, captives nevertheless were a welcome addition to the population of a tribe. Tocantins (1877, p. 93) says that the sole aim of the *Mundurucú* wars was to bring back young women and children. When a warrior was ready to set out on an expedition, a woman relative would ask him to "bring a child for her son." Slave taking became an important factor in Indian wars only in Colonial times when certain tribes found a ready market for their captives in the White settlements. It was primarily the desire for iron tools and other European goods that launched the *Carib*, the *Mojo*, the *Omagua*, and, in a certain measure, the *Mbayá* on their slave raids. Many Indians who lacked commodities which they could exchange for European tools and clothes turned into slavers and made an industry of warfare.

The motives underlying the wars of the *Inca* probably were complex and cannot easily be ascertained from our sources. Many economic advantages resulted from the conquest of a new territory, for part of the resources of the vanquished tribe was assigned to the *Inca* Emperor, whose power increased proportionately. The considerable number of nobles who surrounded the Emperor were also eager for lands and favors that could be forthcoming only as long as the Empire continued to expand. Revolts among conquered peoples, threats of invasions, and even actual invasions were the causes of many wars waged by the *Inca.* It has also been suggested that the practice of keeping the army in the field was a means of preventing armed rebellion at home. Some chroniclers have described the *Inca* wars as sacred expeditions undertaken to spread the cult of the Sun, but even though the *Inca* Emperor may have derived some satisfaction from the asserted supremacy of his gods, it seems doubtful that he was prompted by proselytizing zeal. A psychological factor that should not be entirely overlooked was the tradition and pride that induced a new emperor to strive to emulate his ancestors in the acquisition of glory through force of arms.

**The war summons.**—The chief of a community usually took the initiative for a war expedition, but, before making a final decision, he endeavored to gather as many recruits as possible. Messengers were sent to invite the men in nearby friendly communities to join in the enterprise. In the Guianas and among the *Araucanians*, the heralds carried symbolic arrows which they gave to those whose assistance was desired, together with a knotted string that indicated the exact date of the meeting. Among the ancient *Cumanagoto*, the messenger shot an arrow onto the plaza of the villages he visited. By picking up the arrow and shooting it back the chief signified his willingness to join the projected expedition.

In the Guianas, the Amazon Basin, and the Chaco the plans for a war expedition were decided upon during a solemn drinking bout in which the warriors caroused, danced, and made boastful speeches about their own and their ancestors' exploits. These alcoholic and verbal orgies were supposed to inflame everyone's courage and to dispel the reluctance that some might have felt about joining the undertaking. During the celebrations which preceded any war expedition among the *Island Carib*, an old woman would enter the gathering and recite the list of wrongs, real or invented, that her people had suffered at the hands of their hereditary foes.

Among the *Mundurucú*, when a war expedition was being planned a pledge stick was circulated among the warriors by the war chief. A man pledged himself to take part by cutting a notch in the stick.

When all the *Araucanian* chiefs who had been invited to participate had assembled, a black llama was killed and the arrows and spears were dipped in or anointed with its blood; the chiefs ate a bit of the animal's heart as a pledge of unified purpose.

**Magico-religious rites performed at the outset of an expedition.**—Before setting out on a campaign, civilized and more primitive tribes alike consulted omens and performed some kind of magico-religious ceremony to ensure the success of the expedition and to safeguard the lives of the warriors.

The *Chibcha* spent a whole week making ceremonial preparations. During this time they implored their gods to protect them, sang songs in which they enumerated the reasons for the campaign, and sacrificed children to the deities.

On the eve of a war, the *Inca* performed several rites, which were partly magic and partly religious, for the double purpose of weakening the enemy and their gods and of seeking guidance from omens. While they sacrificed llamas which had been starved for several days, they recited charms which expressed the hope that their foes' hearts would grow as faint as those of the llamas. During the campaign they repeatedly consulted oracles and made new sacrifices to keep the protection of the gods.

Among the tribes of the Guianas, the Amazon, and the Chaco, war dances were performed before a war expedition. The *Jívaro* dances, which were executed for a week at dawn, were a combination of a posture dance and a dialogue carried on by two rows of warriors. The ancient *Carib* of Surinam performed the "Jaguar" and "Snake" dances in order to absorb the fierceness of the one and the silent power of the other.

When a war party was ready to set out, great importance was attached to fortuitous omens as well as those that were sought. If on the night before his departure a *Tupinamba* dreamed about a babracot holding enemy flesh, this was a sure sign of victory; if, however, he had a similar dream about the corpses of his own people, the whole party lost heart and stayed home. The *Cashinawa* insisted that everyone keep awake the night before an expedition because the bad dream of any member of a war party could force the chief to call off his plans.

Shamans also were asked to consult their familiar spirits about the prospects for the planned expedition. The *Chébero* and probably also their neighbors believed that the outcome of a raid depended on the strictness with which their shamans observed several months of confinement and fasting. Defeat was attributed to the shamans' remissness; after a successful raid the shamans were rewarded with a share of the spoils.

The *Nambicuara* never went to war without consulting the auguries through a chief or a shaman. First, the warriors sang and performed a war dance in which they shot arrows at symbolic posts. The shaman hid an arrow in the bush; on the following day it had to show blood spots if the expedition were to be successful.

Before going to war *Araucanian* warriors observed strict chastity. They also drew magic symbols on their weapons and put them in contact with certain animals or animal bones. Some men innoculated themselves with magic powders to make themselves invulnerable. They rubbed their horses with feathers, skins, or vicuña bezoars to make them swift. Shamans blew tobacco toward the enemy's land

and recited charms; they also examined a vessel full of water to learn about the future.

While on the march, warriors were constantly alert for omens. To come upon some inauspicious animal or to hear the cry of certain birds so disheartened the *Tupinamba* and *Araucanians* that they hastily turned toward home. Warriors on the march also observed food taboos; for instance, the *Pilagá* never ate the head or legs of game animals.

The fate of the warriors depended in part on the behavior of the women at home. Consequently, the women had to take certain precautions during the men's absence. *Pilagá* women could not spin or twist strands on their thighs, and menstruating girls could not sit on the ground. Among the *Jívaro* of the Pastaza River, the women gathered nightly during the absence of their men to perform a special dance with snail shell rattles and to chant conjurations (Karsten, 1935, p. 287).

**Declaration of war.**—Because most tribes relied for success on a surprise attack, they seldom declared war formally. There are, however, some exceptions. The *Chibcha* sent heralds to the enemy to announce the beginning of hostilities, and these emissaries remained with the enemy during the war. When the *Jívaro* decided to attack a group with which they had been at war previously, the shaman dug up the spear which had been buried during the peace ceremony. An emissary was sent to notify the enemy, and war etiquette required that the enemy also send a messenger to announce their readiness to fight (Stirling, 1938, p. 52).

Before attacking, the *Amahuaca* sent messengers to scatter grain on the enemy's paths. The Surinam *Carib* dispatched a few macaw feathers ahead of the war party. According to Martius (1867, p. 97) the *Juri* of the Yaoura River declared war by planting an arrow or a spear in enemy territory. A *Cashinawa* chief who was about to storm a village told the enemy to flee at the very moment when his warriors rushed in to cut off their retreat. As a threat and a symbol of hostility, the *Sherente* impaled an arrow in a piece of burití rachis, which they laid in the path of the enemy. If the foe declined the challenge and sought a peaceable settlement, they shot an arrow with a broken head over toward the attackers (Nimuendajú, 1942, p. 76).

The populations which the *Inca* intended to subjugate were first invited to submit peacefully; ambassadors sent by the Emperor took great pains to point out the advantages of becoming incorporated into the Tuahuantisuyu. Supposedly, it was only after such offers had been spurned that the *Inca* attacked.

**The march against the enemy.**—A regular commissariat existed only among the *Inca* armies; within the limits of the Empire, storehouses (tambos) located at regular intervals provided the army with abundant supplies. Abroad porters or herds of llamas followed the army to keep it supplied.

In the Tropical Forest region, warriors carried roasted manioc flour (farinha de guerra), cassava cakes, and, on the upper Amazon, a half fermented yuca mass. Elsewhere, the warriors relied on hunting, fishing, and collecting wild fruits. The members of a Chaco war party would scatter each day to hunt, or they would stop near a lagoon or river to fish. In the evening they reassembled at a prearranged place to camp. Each *Araucanian* warrior carried a small bag of parched meal, salt, and ají. The *Island Carib*, whose expeditions were mainly by sea, were provisioned with manioc flour, smoked fish, and green bananas; they also visited small plantations which they maintained on uninhabited islets (Rochefort, 1658, p. 472).

*Mundurucú* warriors often were accompanied by their wives or sisters, who carried their equipment, prepared their meals, strung their hammocks, aided them when they were wounded, and assisted in the preliminary preparation of trophy heads. The women took no part in actual combat, although Martius reports that they collected the arrows shot by the enemy and delivered them to their own warriors. He even asserts that they "cleverly catch the arrows of the enemy in flight" (Spix and Martius, 1823–28).

The early writers praised the order and discipline which prevailed among the *Inca* armies on the march; by contrast, they represented the war parties of forest Indians as loose bands that observed neither order nor discipline. A closer scrutiny of the situation necessitates a modification of this judgment. Among the *Sherente*, for example, a group of youths known as the akemha formed the vanguard both on the march and in the attack. When several *Jívaro* groups joined in a common expedition, they mixed freely during the day but at night camped separately.

The *Araucanians* adopted to a large extent the army divisions of the Spaniards. Their infantry and cavalry were divided into companies of about 100 men who were commanded by captains as well as by officers of lower ranks (Gómez de Vidaurre, 1889, p. 329). They often marched to martial music played on drums and trumpets.

Chaco warrior bands did not observe any definite order of march, but the site of camps was selected with care so that some natural protection, such as a river, lake, or wood prevented any surprise attack. No sentries were posted, but during the night the *Abipón* scouted the nearby plains, sometimes blowing horns and trumpets to make sure that there was no danger lurking. The *Araucanians* posted guards at night and protected their camps with trenches, thorn hedges, and pitfalls.

Before invading enemy territory, the *Inca* always sent spies, who were generally members of the imperial family, to reconnoiter. Most tribes sent scouts to observe the number and movements of the enemy and, when a surprise attack was planned, to ascertain whether or not the enemy had been alerted. The scattered *Abipón* scouts kept in touch with one another by imitating bird and animal calls.

On the night before a battle, a great many Amazonian and Chaco tribes brewed mead or cashiri and celebrated a drinking bout during which they performed ceremonial dances, shook their rattles (*Tupinamba*), and boasted of the glorious deeds which they intended to perform (*Jívaro*).

Before starting the battle the warriors put on their best ornaments. According to Cieza de León (1932, pp. 55, 63), the Indians of the Cauca Valley went to war wearing all their gold ornaments. Similarly, the tropical Indians wore their most brilliant feather decorations and their most elaborate war paint. Although there can be little doubt that magic properties were assigned to the paint, it also served as a means of identifying the warriors in the heat of battle (*Taulipáng*).

**Strategy and tactics.**—Surprisingly little information is available about *Inca* strategy and tactics. All that is known is that they liked to divide their forces into several armies so that when the enemy had spent his strength on one army, reserves could be thrown into the attack. The order of battle among the Highland tribes seems to have been very similar from Colombia to Perú. The engagement opened by discharges of sling stones and volleys of darts, and then it continued with hand to hand fighting. The *Páez* and *Moguex* of southern Colombia first hurled their javelins, then cast stones with their slings, and, finally, attacked the enemy with their spears. They formed closed squadrons in which men with clubs alternated with spearsmen; the former would step forward to wield their clubs and then would withdraw for protection. It is, however, doubtful that much discipline was observed in pitched battles; even the *Inca* troups broke ranks and each man fought individually. (See Cases, B. de las, 1939, p. 27.)

The equestrian tribes of the Chaco and the Pampas were forced to adopt various tactical devices in order to fight the Spaniards on equal footing. The *Mbayá* battle line was crescent-shape with trumpet and clarinet players in the center. The *Abipón* put archers in the middle and spearsmen on the flanks of their lines. They rarely fought on horseback, but left their mounts at some distance to the rear under the protection of special troups of young men. Yet on rare occasions they did attack on horseback and charged in several parties to harass the enemy's flanks. *Mocoví* cavalry was supported by foot soldiers, and, while the main body fought, small groups raided the enemy's horses and cattle. A common ruse which the *Abipón* used against the Spaniards was to disband as if to flee and then rush back as soon as the Spaniards had broken ranks to pursue them.

In their long wars with the Spaniards the *Araucanians* developed many tactical expedients. All *Araucanian* warriors went to battle on horseback, but those who formed the center of the line dismounted and fought as infantry while other Indians took care of their horses a short distance to the rear. Men armed with spears alternated with those who carried clubs. The cavalry was disposed in two lines on each wing. The toqui, or war chief, took personal command of the right wing and one of his lieutenants of the left one. During the battle the toqui ran along the line giving orders, encouraging his men, and punishing cowards. Before the attack he always made a speech reminding the warriors of the great deeds of their ancestors. The attackers taunted their enemies, often shouting their names in bravado. They attacked "doing all kinds of clownish things, jumping, throwing themselves on the ground, rising suddenly, dodging with their body, advancing and retreating" (Rosales, 1877–78). At the same time the air was filled with shouts and the sound of flutes and drums. If a line broke or was cut down, another took its place. The Spaniards could not help admiring the good order kept by the *Araucanians*, even when they had to beat a hasty retreat (Gómez de Vidaurre, 1889, pp. 328–333). Piñeda y Bascunan tells of an ambush laid by the *Araucanians*: The Spaniards were attacked by cavalry that disbanded and withdrew into a valley, the slopes of which were covered with infantry. Yet, despite their military abilities, the *Araucanians* wherever possible avoided pitched battles, preferring to harass and ambush the enemy.

Battles in open fields were rare, but when they did occur they were preceded by mutual challenges and insults (*Tupinamba* and *Carib*), war dances (*Carib*), and by discharges of arrows. The defenders sought to dodge the missiles by weaving and bending their bodies. When the *Sherente* met their enemies in the open, they staked everything on holding out and preserving their supply of arrows until the enemy had exhausted his, thus either compelling them to break off the combat or to advance under a volley of arrows which resulted in heavy losses (Nimuendajú, 1942, p. 77). Such battles were seldom very bloody, however, because the Indians fled as soon as they had suffered a few losses. Even the bellicose *Abipón* and *Mbayá* would not hold their ground when they had seen some of their comrades fall.

Surprise was the main strategem employed by all primitive tribes of South America in attacking an enemy village or camp; the main intent was to kill as many men as possible before being forced to beat a hasty retreat. The *Island Carib* were convinced that a battle begun openly could not end in success for the attackers. If one of their raiding parties was discovered or even if a dog barked in warning, they retired to their canoes and departed.

Of the Indians of the Orinoco, Gumilla (1791, 2:99) writes that their "warfare could be summed up as ambuscades, false retreats, night attacks and other inventions."

The Guiana Indians were expert at camouflaging their canoes with branches and pieces of bark to make them look like drifting trees. On one occasion the *Acawai* threw a massive log across a river under the water and sent canoes as decoys to attract the *Carib*, who, intent upon the pursuit, capsized against the hidden barrier. Guiana Indians were very skillful at confusing their enemies by multiplying their tracks or by walking backward or on tiptoe.

A war party usually tried to storm an unsuspecting village or camp before dawn when the inhabitants were still asleep. If the attackers learned that the enemies were celebrating a drinking bout, they timed their onslaught to coincide with the end of the feast, when they were certain to find the people overcome with drunkenness.

Preparations for the attack were made very carefully, because on them depended the entire success of the enterprise. A *Cashinawa* chief once gave his men the following instructions before the assault upon a village, "Don't scatter, some of you go to the left, some to the right, the others to the center. I shall stay in the middle. If you are afraid and stand, they will see you and run away. When I am talking to them, prepare your arrows and run ahead. Hide, and when you are ready, whistle. They are whistling. Let's go."

During the fight the war leader of the *Mundurucú* stood behind his warriors directing their movements. Assistants signaled his orders on their trumpets.

The attack was always preceded with war whoops and the sound of whistles or trumpets. Like many North American Indians, the *Toba* and *Araucanians* charged their enemies shouting and striking their mouth rhythmically with the palm of the hand.

The attackers, armed with spears or clubs, would rush into the village to massacre everyone in sight, sparing only the children and sometimes the young women, whom they captured. The surprised victims would try to resist long enough to allow the women and children to escape into the bush, where they scattered to avoid mass capture. But if they met strong resistance the attackers usually did not insist for long; very soon they retreated lest the enemy rally and ambush them before they could reach their boats or extricate themselves from the situation. They felt that they had achieved a victory if they had taken some prisoners (*Tupinamba* and *Carib*) or had cut off some heads (*Jívaro*, *Chébero*, *Mundurucú*, *Cocamilla*, etc.)

**Gas and flame attacks.**—In order to dislodge an enemy from a strongly held position, several Indian tribes used to burn red pepper (*Capsicum crassum*). This plant contains a substance (capsaicin) highly irritating to the mucous membrane, that scatters in the air in the form of a very fine powder when set afire (Nordenskiöld, 1919 b, p. 224). The device was used by the ancient *Tupinamba* and *Carib*[1] (Staden, 1928, pt. 2, ch. 26) when they besieged a village, and by some Indians of the Orinoco to disorganize the enemy. In an encounter with the Spaniards under Diego de Ordaz (Oviedo y Valdés, 1851–55, bk. 24, ch. 3, p. 219) some of the warriors advanced holding a pan of embers into which they threw red pepper when the wind was favorable. The *Oyampi* told Crévaux (1883, p. 271) that they repelled an attack on their village by burning red pepper to provoke sneezing fits among their enemies.

A common method of spreading terror and of forcing the enemy to abandon their village was to set fire to the thatched roofs by shooting arrows tipped with burning cotton pads. The use of flaming arrows is reported among a great many tribes, including the *Tupinamba*, *Guaraní*, *Abipón*, *Mataco*, *Carib*, *Chavante*, and *Mundurucú*.

**Palisades.**—For protection against sudden raids, many tribes in South America surrounded their villages with palisades. There is little doubt that Nordenskiöld (1919 b) is right in assuming that palisades were known to the Indians before the Conquest and that only in a few cases did they borrow the idea from the Europeans. Indian fortifications differed from those constructed by the Whites in at least one significant feature: the outer wall with its moats was intended to delay and hamper the attack while the defenders shot through loopholes in the compact inner wall.

*Tupinamba* villages located near enemy territory were defended by an outer wall consisting of stakes set up sufficiently close together to prevent a man from creeping between them and by a compact inner stockade provided with loopholes. The walls were from 5 to 10 feet high and often had salients from which shots could be fired along the wall.

*Guaraní* villages also were fortified with double or triple stockades made of heavy posts and a series of moats and pits bristling with half-buried spears. The Indians of the Chiquitos region surrounded their villages with thorny hedges. Palisades enclosed the *Bauré* villages. Nordenskiöld (1919 b, p. 230) found the remains of moats at Matucare on the Guaporé River.

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[1] "Ils [the *Carib*] poussèrent même, à la faveur de la nuit, un pot rempli de braise ardente, sur laquelle ils avaient jeté une poignée de grains de piment, en la cabane que les Français avaient dressée de leur arrivée en l'île, afin de les etouffer, s'ils eussent pu, par la fumée dangereuse et la vapeur étourdissante du piment." (Rochefort, 1658, p. 479.)

Carvajal (Medina, 1934) mentions a fortified village which Orellana tried to storm near the mouth of the Rio Nigro. Our 16th-century sources mention palisades (palenques) among the *Agerano* of the upper Amazon (Rel. geogr., Ind., 1881–97, 4: cxliii). In the 18th century, the *Guypunavi* of the Orinoco had palisades which were described as follows: "The posts were a foot thick, and were placed close together. Between every other one was a loophole 3 feet above the ground. About 5 yards above the ground ran an inner terrace from which one could shoot over the wall. Round the palisade ran a deep ditch in which had been placed poisoned stakes." A *Maipure* fort on the Tuapu River was protected by a stockade of tree trunks and was approached by a drawbridge that could be raised.

In the early days the villages of the Guiana coast were fortified with a double stockade. The use of this protective device was abandoned by the Guiana Indians, although in the 19th century Appun (1871, p. 368) saw an unfinished *Macushí* palisade.

There are many early descriptions of Indian palisades in the Cuman region of the Venezuelan coast. Some palisades were formed of uprooted trees that had been replanted close together around the village, forming a double wall with only a narrow space between (Oviedo y Valdés, 1851–55, 2: 254). The branches and trunks of these trees, bristled with thorns and spiny plants, were interlaced around the trunks to form a kind of natural barbed wire. (For citation, see Nordenskiöld, 1919 b, p. 232.) Other palisades of Venezuelan villages consisted of stakes driven into the ground. Outside the palisade of a village besieged by Van Speier on the Meta River there was a ditch full of sharp stakes carefully hidden under a thin earth-covered platform. The Indians of the Meta River were so well fortified behind their palisades and moats that they could resist even the attacks of the Spaniards (Nordenskiöld, 1919 b, p. 233).

The *Timote* constructed fortifications on inaccessible hills with trenches and walls provided with loopholes. Palisades also were built by the *Chibcha* of the region of Bogotá. The *Pozo* and *Arma* in the Cauca Valley fortified their villages with rows of transplanted bamboos. Inside there were platforms for the sentries (Cieza del León, 1932, pp. 55, 61).[2]

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[2] "Tienen grandes fortalezas de las cañas gordas que he dicho, arrancadas con sus raices y cepas, las cuales tornan a plantar en hileras de veinte en veinte por su ordén y compas, como calles; en mitad desta fuerza tienen, a tenian cuando yo los vi, un tablado alto y bien labrado de las mismas cañas, con su escalera, para hacer sus sacrificios" (Cieza de León, 1932, p. 55).

Indians of Pozo: "A las puertas dellas hay grandes palizadas y fortalezas hechas de las cañas gordas, y en medio destas fuerzas habia muy grandes tablados entoldados de esteras, las cañas tan espesas que ningún espanol de los de a caballo podia entrar por ellas; desde lo alto del tablado atalayaban todas los caminos, para ver lo que por ellos venia" (Cieza de León, 1932, p. 61).

*Araucanian* palisades also were double. The first enclosure,

> which formed the real redoubt, [was] arranged in the form of a palisade, with loopholes for archery. For a considerable space outside the ground was honeycombed with pitfalls and ditches, lightly covered with branches of rushes and turf, at the bottom of which sharpened stakes were planted. [Latcham, 1909, p. 363.]

Some Indian villages of Northwest Argentina were defended with enclosures made of cactus and spiny trees. Hedges of spiny bushes surrounded villages of the Chiquitos region (Schmidel, 1938) and of the *Chiriguano* and Guaporé River tribes (Nordenskiöld, 1919 b, p. 232).

The insecurity that prevailed in the *Jívaro* region prompted the invention of a great many ingenious protective devices. When an attack was expected, either a palisade was built around the house or else the walls of the house were reinforced, and deadfalls with pointed chonta sticks were dug around the dwellings. Traps, spears, and even loaded guns with automatic triggers were set along the paths.

> Sometimes houses which were built near a river bank had concealed tunnels leading from inside the house through the bank to the edge of the river. Thus they could escape or send out messengers if badly pressed. [Stirling, 1938, p. 59.]

Moreover, in some villages (jibarías), the natives built crude towers of wood and stone where women and children could take refuge in case of attack.

Most Tropical Forest Indians prepared caltrops and pitfalls along the paths which the enemy would be likely to follow. They themselves used obscure, winding paths.

The best military structures of South America were the fortresses built by the *Inca* on hilltops at strategic points or close to cities and towns, where they served as places of refuge in time of war. These fortresses were guarded by a series of terraces, and their walls had a succession of salients from which the defenders assailed their attackers' flanks. The *Inca* built chains of fortresses along their threatened borders, notably in the mountains bordering the Chaco and the Province of Santa Cruz.

**Return of a war party and victory feasts.**—After a successful attack on an enemy village, the victors hastened to bury their dead and to cut or mutilate the bodies of the slain enemies. The *Tupinamba* and *Guaraní* broiled the corpses of their enemies and ate them on the spot or carried them home. Having satisfied their desire for vengeance, the war party beat a hasty retreat, before their opponents could recover from their surprise. The *Jívaro* and *Mundurucú* halted at a safe distance to prepare the head trophies with which they celebrated their victory feast. As a rule, messengers were sent ahead to announce the outcome of the expedition to the waiting people at home.

When a *Tupinamba* war party brought back prisoners, they become the objects of wild manifestations of hatred and scorn by the women. A similar reception was given the scalps and head trophies among the Indians of the Chaco.

The return of the victorious party was celebrated with dances, songs, and drinking bouts, which were preceded or accompanied by numerous magic rites the purpose of which was to protect the warriors against the vengeance of their victims' ghosts. *Jívaro* warriors with blood-smeared chests and legs danced around the shrunken heads (tsantsas) of their enemies, brandishing their lances and dramatizing the killing. During the dance, the captive women stood by weeping; if no female captives had been taken, proxies were appointed from among their own women to mourn for each tsantsa (Stirling, 1938, p. 59). At a *Mundurucú* victory feast, the mummified heads of the enemies were worn suspended from the necks of the widows and sisters of the dead. The *Tupinamba* gathered in a hut to drink chicha, to dance and sing in honor of the maraca that had brought them victory. *Pilagá* warriors were received festively by their women, who danced holding tufts of red feathers. The scalps were handed to the women, particularly to those who had lost a husband in the expedition. The women danced and played with the trophies, derisively pretending that they were husbands and lovers, and they improvised comic dialogues with the scalps. Masked warriors performed a special dance around a tall post from which hung the scalps.

*Taulipáng* warriors, after dancing and singing their victory song, were purified by the same ordeals as those undergone at puberty. They sat on ants, flogged one another with whips, and passed a cord covered with poisonous ants, through their mouth and nose. Then they abandoned their village and settled in another site.

A man who had slain an enemy was thought to be dangerous both to himself and to others, and he was expected to observe several taboos. Most commonly he observed a diet, which, among the *Jívaro*, lasted for about 6 months. As a rule, he also remained strictly continent. *Sherente* warriors refrained from bathing for a period of time. *Tupinamba* and *Sherente* braves incised themselves with a sharp instrument and rubbed the wounds with ashes and genipa. *Apinayé* and *Cashinawa* killers ate large quantities of pepper. In addition, the *Apinayé* killer was not allowed to speak to anyone for a time, and no one could drink out of his cup. Even while the party was returning from the raid, he remained segregated from his companions both on the march and in camp. (See Stirling, 1938, p. 59; Abreu, 1914, p. 65; Nimuendajú, 1939, 1942, p. 78.)

When a *Mundurucú* warrior had been wounded, his name was not spoken for a year; during this time he was considered to be dead. A feast finally reinstated him in the community.

**Peace making.**—European travelers were evidently less interested in the procedure by which peace was restored than in warfare, for they very seldom give details about its mechanisms and rituals.

When two *Ona* bands wished to end hostilities, each man handed one of his opponents five blunt arrows and subsequently walked toward him, exposing himself to the shots though trying to dodge them as well as he could. According to Bridges (1938), after the opponents had reciprocated, the bands fraternized for a few days.

Among the *Araucanians*, the party that wished to sue for peace sent a herald to the victors without a weapon and carrying a branch of canelo. The chiefs of the two parties then met at a designated place, and each sacrificed a llama. The hearts were cut into pieces, the blood was sprinkled on the canelo branch, and the bits were exchanged by the opponents. The chiefs also exchanged the blood-smeared canelo branches and often put all their commanding staves together in a bundle with them. These symbolic acts were followed by long speeches in which peace terms were discussed and assurances of good will were given. In some cases the warriors buried their toquis, arrows, and war instruments in a hole over which they planted a canelo tree.

Among the Pilcomayo River Indians, peace was reestablished when every family that had lost a member received wergeld in the form of sheep, horses, and other gifts. Sometimes kidnaped children were exchanged (Nordenskiöld, 1912 a, p. 135).

The *Jívaro* peace ceremony consisted in burying a spear. The lance was supposed "to carry with it the animosity of the feud" (Stirling, 1938, p. 51).

The Guiana *Carib* sent an emissary to notify their enemy of their desire for peace.

> The two nations then ranged themselves in order of battle, just as if they wanted to fight. They flung abuses and reproaches at each other for all the outrages committed. Finally they threw their arms to the ground and then proceeded to the drinking hall where they feasted all together for several days. [Barrère, p. 1743, p. 174.]

Our Peruvian sources do not indicate how peace was made after a campaign. Like the *Aymara*, the *Inca* probably insisted on demonstrations of submission. The *Aymara* expected the defeated enemies to present themselves in their oldest clothes, barefoot, and with their hands tied behind their backs.

**Treatment of prisoners.**—Even in areas with an otherwise rather uniform culture, the fate of prisoners taken in war depended on the existence or absence of such institutions as cannibalism and slavery.

In some areas, for example Perú and Colombia, the type of war and the religious practices of the victors determined the attitude toward the conquered foe.

The Europeans' desire for slaves also modified the treatment meted out to defeated enemies in many tribes. The *Tupinamba*, *Carib*, and *Omagua* abandoned cannibalism for the more profitable slave trade; other groups, which previously had captured only women and children, began to hunt adults of both sexes. Many 18th-century Europeans justified their purchase of captives from the Indians on the grounds that it saved the prisoners from the cruel treatment they had formerly received, but they never recognized the havoc wrought among the native populations by the constant state of war that grew out of the slave trade.

The introduction of the horse into the Pampas and the Chaco gave the *Araucanians* and the *Guaicuruan* tribes considerable military superiority over other tribes. It permitted them to capture more prisoners than they could readily assimilate and the captives, therefore, formed a servile class, which among the *Mbayá*, became hereditary.

The *Macushí* and other tribes of the Guianas and the *Conibo* of the Ucayali River kept their war prisoners in bondage and forced them to work in the fields. The lot of such captives was not harsh; very often they married into their masters' families. In some *Carib* dialects the word "peito" applies both to captive and to son-in-law. (For slavery among the *Conibo*, see Amich, 1854, p. 90.)

East of the Andes, most Indians, unless they practiced cannibalism or kept slaves, killed the adults on the spot and captured only young girls, whom they married or took as concubines, and children, who became full fledged members of the tribe. Later in life such children even accompanied their adoptive families on expeditions against their former tribal kinsmen (*Jívaro*, *Mura*, *Toba-Pilagá*, *Mataco*). When the *Mura* were pacified, one of their most important chiefs was a man who had been captured as a child. The *Carajá* were exceptional in that they did not marry their female captives, but obliged them to become village prostitutes; however, a man could acquire permanent rights over a captive woman by making payment to the owner.

Except when the *Inca* waged a war of extermination, captives were permitted to return to their country, though sometimes a whole population was shifted to another region as mitimae, and their territory was given to more reliable groups. The Spaniards may have somewhat idealized *Inca* warfare, for now and then there are examples of great cruelty practiced against defeated enemies. Enemy chiefs often were tortured to death; some were flayed alive. The *Inca* paraded the prisoners during triumphal entries into the Cuzco; as a symbol of his victory and of their humiliation, he trod on their necks. When the captives were dedicated to the Sun, a statue of the God or a high priest performed the same rite.

War captives were sacrificed to the gods in Perú, and Central Colombia, the only two regions south of México where blood sacrifices were a prominent aspect of the religious system of the people. The *Araucanians* sacrificed the first prisoner taken in battle and extracted his heart in the same fashion as among the civilized peoples of the Andes.

The torturing of prisoners was not common in South America, except among the *Carib* of the Guianas, the Indians of the Cauca Valley, the *Araucanians*, and, to a certain extent, the *Tupinamba* and *Guaraní*. The *Chibcha* blinded, maltreated, and derided their prisoners during victory feasts. The *Carib* burned and tormented their victims before eating them. The horrors perpetrated by the *Araucanians* upon their war captives were perhaps in part the result of their deep-seated hatred of the Spaniards. Living prisoners were torn to pieces, burned, or crucified. Some were forced to run the gauntlet; others were knocked down or speared after they had performed a magic ceremony to harm their own tribe.

Neither the *Abipón* nor the *Mbayá* treated their war prisoners harshly.

## CANNIBALISM

In an analysis of cannibalism, a distinction should be made between the custom of eating dead enemies (exocannibalism) and that of devouring one's own dead relatives (endocannibalism). Although practiced by many South American tribes, cannibalism was less prevalent than some sources would seem to indicate. The Spaniards and Portuguese accused the Indians of cannibalism on the vaguest evidence, often with the deliberate intent of justifying their enslavement. This survey will discuss only those tribes for which there is irrefutable evidence of exocannibalism.

Cannibalism was an important aspect of the culture of *Tupí-Guaraní* and *Carib* tribes; indeed, the word itself is derived from the name of the latter. In both groups ceremonial cannibalism was closely linked to warfare and was a manifestation of the basic religious and social concepts.

The lengthy and complicated ritual of the *Tupinamba* is well known from numerous descriptions furnished by 16th- and 17th-century travelers who had witnessed and been considerably impressed by the ceremonies. The prisoners taken by a *Tupinamba* war party were received with manifestations of anger, scorn, and derision, but after the first hostile outburst, they were not hampered in their movements nor were they unkindly treated. Their captors, whose quarters they shared, treated them as relatives. The prisoners generally married village girls, very often the sisters or daughters of their masters, or, in certain cases, the widow of a dead warrior whose hammock and ornaments they used. They received fields for their maintenance, they were free to hunt and fish, and they were reminded of their servile condition by few restrictions and humiliations.

The period of captivity lasted from a few months to several years. When, finally, the date for the execution had been set by the village council, invitations were sent to nearby villages to join in the celebration. The ritual for the slaughter of a captive was worked out to the most minute detail. The club and cord which figured prominently in the ceremony were carefully painted and decorated in accordance with strict rules. For 3 days before the event, the village women danced, sang, and tormented the victim with descriptions of his impending fate. On the eve of his execution a mock repetition of his capture took place, during which the prisoner was allowed to escape but was immediately retaken; the man who overpowered him in a wrestling match adopted a new name, as did the ceremonial executioner.

The prisoner spent his last night dancing, pelting his tormentors, and singing songs which foretold their ruin and proclaimed his pride at dying as a warrior. In the morning he was dragged to the plaza by old women amidst shouts, songs, and music. The ceremonial rope was removed from his neck and tied around his waist, and it was held at both ends by two or more men. The victim was once more permitted to give vent to his feelings by throwing fruit or potsherds at his enemies. The executioner, who appeared painted and dressed in a long feather cloak, derided the victim, who boasted of his past deeds and predicted that his relatives would avenge him.

The actual execution was a cruel game. The prisoner was allowed sufficient freedom of movement to dodge the blows aimed at him; sometimes a club was put in his hands so that he could parry the blows without being able to strike back. When at last he fell, his skull shattered, everyone shouted and whistled. Old women rushed in to drink the warm blood, children were invited to dip their hands in it, and mothers smeared their nipples so that even infants could have a taste. While the quartered body was being roasted on a babracot the old women, who were the most eager to taste human flesh, licked the grease running from the sticks. Certain delicate or sacred portions, such as the fingers and the grease around the liver, were given to distinguished guests.

Afterwards the executioner was obliged to observe a series of taboos. He remained in his hut until the hair on his shaved forehead had grown again. During his retreat he reclined in his hammock and spent his time shooting miniature arrows at a wax figure that represented the ghost of his victim. His return to normal life was celebrated with a drinking bout during which he scarified himself by slashing his body in various patterns with an agouti tooth. The more tatoo marks a man could exhibit, the higher was his prestige, for in *Tupinamba* society a man's social standing rested on the number of captives he had executed on the plaza and served to his fellow villagers.

Ceremonial cannibalism has been reported among the following *Tupí-Guaraní* tribes: *Guaraní*, *Chiriguano*, *Guarayú*, *Yuruna*, *Shipaya*, *Apiacá*, *Parintintin*, and *Oyampi*. Although the *Omagua* and *Cocama* have been vigorously defended by the missionaries against accusations of cannibalism, their treatment of prisoners suggests that in former times their practices differed little from those of the *Tupinamba*. Among the *Omagua* and *Cocama* prisoners were well treated, but those who were particularly brave were executed and their heads stuck on sticks during certain feasts. The corpses were not eaten, but the whole ceremony is reminiscent of the *Tupinamba* sacrifices.

The sacrifice of war prisoners among the ancient *Guaraní* followed very closely the *Tupinamba* pattern. The victim, who had shared the life of the community for a long time and had even married a daughter of his captor, was finally dragged by women to the plaza where he threw missiles at his tormentors until he was knocked down with a club. Children were encouraged to bathe their hands in his blood so as to become valiant and "avenge their relatives." The ceremony invariably was the occasion for drinking and dancing.

The *Chiriguano* are said to have delivered their *Chané* captives to their children, who shot arrows at them. The corpses were eaten by the whole community. During the first century after their conquest of the western Chaco, the *Chiriguano* are said to have devoured about 60,000 *Chané*.

The *Itatin*, the ancestors of the *Guarayú*, killed their captives in the same manner as the *Guaraní;* even in the 19th century the *Guarayú* recalled their cannibalistic feasts on the *Chiquito*.

Among the *Shipaya*, cannibalism took the form of sacrifices to the demon Kumaphari. The god, through the medium of a shaman, asked his people for a meal of human flesh. An expedition was then planned. Before the warriors' departure, one man was selected by chance to take a prisoner. If successful, he tied the victim with a special rope and brought him back. The prisoner was well treated until he was delivered to the men of the tribe who shot him with arrows. Part of the corpse was eaten; the rest was offered to the god. The head was kept as a trophy and was supposed to announce the approach of enemies.

Even in quite recent times *Parintintin* ate the eyes, tongue, and leg and arm muscles of their dead enemies to prevent their ghosts from waking, seeing, talking, and shooting. The trophy skull was used in several ceremonies with which the Indians received a visitor. On these occasions the killer danced with the skull and pantomined the death of his enemy. After he had chanted and served mead to his guests, he laid the skull on the ground so that everyone could shoot at it. Other men then danced with the skull and extolled their own deeds. The *Parintintin* remembered a time when they had massacred their prisoners on the village plaza with a feather-decorated lance (probably a club).

Ever since Columbus' voyage, the *Carib* have been so famous as passionate maneaters that their very name has become synonymous with anthropophagy. Evidence of their cannibalistic practices was found by Columbus on Guadaloupe, where the Spaniards discovered half-cooked human flesh. Liberated *Arawakan* captives told them that the *Carib* raised children to be eaten, and that they even devoured the progeny of captive women. According to Peter Martyr (Anghiera, 1907, p. 12), these children were castrated in order to improve the flavor of their flesh, but one may doubt the accuracy of this statement. Later authors, who were better informed about *Carib* customs, mention neither the castration of boys nor the killing and eating of captive women's children.

Rochefort has written an excellent account of cannibalism among the *Island Carib*. An *Arawakan* prisoner was kept in the home of his captor, and at night he was tied to his hammock. On the day set for his sacrifice the victim was taken to the plaza accompanied by taunts and insults. There he delivered a speech in which he boasted of his courage and threatened the crowd with the vengeance of his people. He was slowly tortured to death, the people burning him with torches, slashing his skin, tossing red pepper into his wounds, and shooting at him with arrows. He tried his best not to betray his suffering. Finally, his skull was crushed with a club. The corpse was immediately cut into pieces, roasted, and eaten. Rochefort denies that the children of captive women were eaten (Rochefort, 1658, pp. 480–488).

There are several descriptions of the cannibalism of the mainland *Carib*. The *Noragues* killed their prisoners by shooting at them. Even in Schombergk's time, the Pomeroon *Carib* remembered that their ancestors had been cannibals.

Originally, the *Arawakan* tribes of the West Indies and the Guianas seem not to have been cannibals, but some tribes may have adopted the practice as a form of revenge against their *Carib* enemies.

The *Arawak* of Puerto Rico are said to have treated their *Carib* captives as they themselves were treated. A Dutch author of the

17th century has given an eyewitness account of the treatment inflicted by *Arawak* on some *Carib* prisoners. The captives were well guarded but were not mistreated until the time for their death drew near, when they were insulted, beaten, and tormented with descriptions of their coming death. In the same manner as *Tupinamba* warriors under similar circumstances, the victims challenged their captors and tormentors and predicted that their death would be avenged. The people burned them with torches until finally a "captain" crushed their skull with a club. The people all rushed on the corpses to cut off slices of the flesh, which they put in the pepper pot.

According to Gumilla (1791), the *Arawakan Caberre* of the Orinoco River feasted on the corpses of their hereditary enemies, the *Carib*.

Martius (1867) and Marcoy (see bibliog. Hdk., vol. 3) are our main authorities on the cannibalism of the *Miranya* and their bitter enemies, the *Omagua*. A cynical *Miranya* chief was said to have remarked to Martius that a dead enemy was no better than game. The *Miranya* not only ate fallen enemies, but also killed their *Omagua* prisoners for this purpose. Captives taken from other tribes they preferred to sell.

*Omagua* practices recall those of the *Tupinamba*. The captives were not tied up and, although under constant supervision, could move around freely. They married women in the tribe, who saw to it that they were well fed. At last, on a night when the moon was full, they were taken to the forest to collect firewood. Then their captors would mark with red paint the parts of the body which they intended to eat. The rest of the night was passed in dancing; even the prisoners joined in the rejoicing. In the morning they were killed with clubs as they emerged from their huts. The corpses were entirely eaten, but those who partook in the meal made themselves vomit lest they retain any morsel of the human flesh.

Cannibalism was rampant among the tribes of the Putumayo River, especially among the *Witoto*, the *Andoke*, and the *Resigero*. Prisoners were executed during a drinking bout which lasted for 8 days. The head and limbs were eaten, but the brains and entrails were not. The male genital organs were presented to the wife of the chief, the only woman who shared in the feast. Each man boiled his share in a large pot, retrieving the flesh with a string (Whiffen, 1915, pp. 119–125). Crévaux visited a *Witoto* village during a cannibalistic meal and saw a head boiling in a pot. The victim was a *Carijona* Indian, a tribe whom the *Witoto* accused of having killed and eaten members of their own group.

The *Cubeo* also ate their enemies at a dance held to celebrate victory. The penis and scrotum, which were cut off and dried in smoke, were worn by a dancing warrior over his own genitals. At the end of the dance, the *Cubeo* warrior's wife ate the penis to become fertile. Men are said to have preferred the loins, although the arms and ribs also were eaten (Goldman, Handbook, vol. 3, p. 786).

According to Figueroa (1904, pp. 150, 155), the *Gaye*, *Roamayna*, and *Zapa* were cannibals, who feasted on the bodies of their slain enemies. The *Amniapä* and *Guaratagaja* of the Guaporé River basin readily admitted their cannibalism. They ate not only the barbecued bodies of their enemies but also the corpses of tribesmen whom they put to death for certain crimes.

Cannibalism assumed almost monstrous proportions among the *Chibchan* tribes of the Cauca Valley from Popayán to Antioquia. With the exception of the *Porce*, the *Aburra*, and the *Coconuco*, all the Indians of this region were branded by the Spaniards as passionate cannibals, but they particularly singled out for denunciation the *Carrapa*, *Picara*, *Pozo*, *Arma*, *Cenufana*, *Evéjico*, and *Antiochia*. Outside of the Cauca Valley itself, the *Guambia*, *Malvasa*, *Polindara*, *Puracé*, *Tembia*, and *Colaza* were specifically mentioned as cannibals. The Spaniards obviously exaggerated when they claimed that tribes devoured their own close relatives or carried on markets for the sale of human flesh. Actually, only war captives were eaten. The Indians went to battle carrying ropes with which to tie up prisoners not eaten on the scene. The *Pozo* are said to have devoured 100 captives under Cieza de León's eyes; on another occasion the 4,000 *Picara* auxiliaries of the Spaniards are supposed to have eaten 300 dead enemies. The victims were killed with a blow on the back of the neck, which they received kneeling with an air of stoical resignation. In some tribes (*Arma*, *Caramanta*, *Iraca*, *Guacuceco*) the victims were torn to pieces. In several accounts the Indians are said to have eaten raw flesh, especially the heart and entrails; but as a rule, the flesh was boiled. The *Arma* and *Paucura* shut their prisoners in bamboo cages to fatten them. The *Arma* killed the victims when they sacrificed to the gods by tearing out their hearts. These Indians ate prisoners of either sex and of any age. Our sources report that they ate their female prisoners together with their progeny. Cieza de León [3] states that some of these Indians forced their male slaves to have intercourse with women of their own tribe in order to beget children for cannibalistic feasts. The *Quimbaya* ate human flesh only on special occasions. (For the tribes of Colombia, see Handbook, vol. 4, pp. 297–338.)

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[3] Cieza de León, 1932, p. 59: "Dentro de las casas de los señores tienen de las cañas gordas que de suso he dicho, las cuales, despues de secas, en extremo son recias, y hacen un cercado como jaula, ancha y corta y no muy alta, tan reciamente atadas que por ninguna manera los que meten dentro se pueden salir; cuando van a la guerra, los que prenden pónelos allí y mándanles day muy bien de comer, y de que están gordos sácanlos a sus plazas, que están junto á las casas, y en los días que hacen fiesta los matan con grand crueldad y los comen; yo ví algunas destas jaulas o cárceles en la provincia de Arma; y es de notar que cuando quieren matar algunos de aquellos malaventurados para comerlos los hacen hincar de rodillas en tierra, y abajando la cabeza le dan junto al corodrillo un golpe, del cual queda atordido y no habla ni se queja, ni dice mal ni bien."

**Partial cannibalism.**—Cannibalism may be restricted to the eating of certain parts of the human body which for magico-religious reasons are regarded as the seats of special virtues. For example, the ancient *Chébero* of the Huallaga River ate only the liver, heart, and entrails of their dead enemies (Maroni, 1889–92, 28: 389).

The cannibalism of the *Araucanians* belonged to the same category. The heart of the sacrificed captive was either bitten and sucked by the chief and others or was cut into small pieces which were distributed among the warriors. In some cases, the *Araucanians* broiled and ate pieces of flesh torn from the living captives or drank their powdered bones in chicha.

**Doubtful cases of cannibalism.**—The *Botocudo* repeatedly have been branded as ferocious cannibals, but the evidence, generally obtained at second-hand, is doubtful. The same may be said about the *Purí-Coroado*, although Eschwege reports that during their victory celebrations the *Coroado* licked the arm of a slain enemy which had been dipped in chicha.

## HUMAN TROPHIES

The practice of preserving as a trophy the head or some other bodily part of an enemy killed on the field of battle or executed at home is very widespread in South America. Moreover, since the subject of trophies has seldom failed to interest ancient and modern travelers, there is ample documentation for the practice. A great variety of motives of a psychological, social, and religious order underlie the taking and preparation of such trophies. Unfortunately, our sources seldom allude to the reasons for the practice, and it is only in the case of the *Jívaro* that we may discern some of the implications of head hunting. Though many South American Indian tribes celebrated the taking of heads with great rejoicing and honored those who obtained them, no tribe, not even the *Jívaro*, seem to have developed the institution to the same extent as have some Malayan and Papuan tribes. Among the *Jívaro*, the possession of a trophy head seems to have ensured good luck to the owner, first because it contained tsarutama or magic power and secondly, because it secured the good will of the ancestors whose desire for revenge was gratified (Stirling, 1938, p. 75). Before its preparation, however, the head was considered to be inert and impotent; it assumed its magic powers only after it had been shrunk in accordance with strict rules.

**Head trophies.**—Head trophies in South America may be classified into four main types: (1) skulls, (2) mummified heads, (3) shrunken heads, or tsantsas, and (4) skull cups.

The number of head trophies which the Spaniards found in the Indian villages of the Cauca Valley is eloquent proof of the ferocity and the bloody character of the wars waged by these Indians. The heads hung in rows from the bamboo palisades and from the walls of temples and houses and lay in heaps on platforms on the plazas. Some heads probably were mummified because with their hair and paintings they had a lifelike appearance. The bamboo supports were pierced so that the wind blew through the holes with a mournful sound.

The tribes of Veragua, Darién and Panamá also kept their villages well stocked with human heads. Even though most of the skulls which Columbus found in the huts of the *Taino* in the West Indies clearly were the remains of ancestors, these Indians seem to have taken the heads of their enemies. There are few references to head trophies in the Guianas, but there is little doubt that here, too, the practice was general.

Early and recent accounts alike mention head trophies among the Amazonian tribes. Among the *Tupinamba*, *Guaraní*, and *Omagua*, the skulls of enemies were stuck on posts in front of the huts or on the palisades. The *Shipaya* greatly valued the skulls of their enemies and hung them in nets from the roof of the huts. The trophy heads of the *Mundurucú* are famous because of the skill with which they were prepared. After the brain and soft parts had been removed, they were plunged in oil and then exposed to the sun and to smoke. The empty sockets were filled with artificial eyes made of wax and cutia teeth. A carrying cord was laced through the lips.

A parallel may be established between the *Mundurucú* trophy heads and several specimens found by Tello at Nazca, but the method of preparation was somewhat different. In Perú the skin was peeled from the skull, which was cleansed of all organic matter, and, when the skin was perfectly cured, it was again stretched over the skull. Like the shrunken heads of the *Jívaro*, the Nazca trophies have skewers through the lips.

Scenes represented on the ceramics and textiles of the Nazca, Ica, and Tiahuanaco Periods bear ample evidence of the importance given by these early civilizations to trophy heads. Some details suggest that the heads were perhaps shrunken like the *Jívaro* tsantsas.

The *Inca* celebrated their victories by parading the heads of their enemies on the tips of lances or by bringing the trophies to Cuzco.

From historical sources as well as from rock paintings and vase decorations, we know that the bellicose *Diaguita* took the heads of their victims. Some of the skulls have been found in tombs in the valley of Humahuaca.

The *Araucanians* kept only the heads of famous enemies and of the prisoners whom they killed after a victory.

**Shrunken heads.**—The *Jívaro* owe their fame to the shrunken heads, or tsantsas, which they still prepared in modern times and which have been eagerly sought after by collectors. (Their technique has been described in the Handbook, vol. 3, p. 625. See also Stirling, 1938, pp. 56–59.)

In pre-Columbian times the art of shrinking heads was widespread in the Andean area. Early chroniclers have given us excellent descriptions of shrunken heads and of the methods of their preparation among the Indians of the Ecuadorian Coast. Vases in the shape of shrunken heads and representations of heads reminiscent of the tsantsas may be assigned to the Nazca, Ica, and Tiahuanaco Periods, but shrunken heads themselves have not been found in Perú. It is a moot question whether the countless heads with skewered lips painted on Nazca vases actually were reduced or were prepared like the specimens described by Tello.

In the 17th century, the neighbors of the *Jívaro*, the *Maina*, *Chébero*, and *Cocama*, also prepared tsantsas from the heads of their enemies.

**Skull cups.**—Following an ancient custom, the *Araucanians* made a cup from the skull of the famous conquistador Valdivia. The same method of scorning the enemy occurred in Perú, where the skull vessels were often mounted on silver. It was also found among many tribes of the Chaco, Brazil, and the Guianas.

**Stuffed corpses.**—The most spectacular trophies displayed by South American Indians were the stuffed bodies of their enemies. The Indians of the Cauca Valley seem to have carried this practice to extremes. Cieza de León (1932, p. 84) writes that he saw in Cali on a platform, "corpses which had been opened and flayed with a flint knife and eaten. The skins were then stuffed with ashes, the faces remodeled with wax; they were set up in lifelike position." These Indians also preserved the feet and hands of their enemies and even their ash-filled intestines. The *Huanca* Indians of the Valley of Xauxa similarly placed the stuffed skins of war captives in their temples. Even the *Inca* stuffed the corpses of war captives with ashes or straw, and made their stomachs into drums. To add to the insult, the hands of the corpse were so arranged that he seemed to be drumming on his own stomach and a flute was placed in his mouth.

The flaying of enemy corpses has been reported for the *Arara*, a *Carib* tribe of the lower Xingú River.

The ancient *Quechua* made drum heads of the skin of their enemies. The *Araucanians* made rattles from the dried skin of their enemies' hands, and at dances they wore masks made from the dried and molded facial skin of dead captives. Occasionally, they stuffed the bodies with straw. Some of the *Abipón* made arrow quivers from the cured skin of their enemies' hands. Stuffed hands were seen by Sotelo de Narváez among the Indians of Santiago del Estero in the Argentine.

**Scalping.**—Scalping has been reported only in two regions of South America: in the Chaco, where it was practiced by several tribes (*Mataco*, *Toba*, *Pilagá*, *Mocoví*, *Abipón*, *Mbayá*) and in the Guianas, where it is ascribed to the *Carib* by several usually reliable sources. The occurrence of the custom in the Guianas is most disconcerting. Friederici (1929) tries to ascribe it to the influence of escaped North American Indians brought to the Guianas as slaves; but this hypothesis is not acceptable to Roth (1924), who believes scalping to be an indigenous practice. The Chaco Indians made cups out of the dry skin from the scalp and a portion of the face. The *Toba* and *Ashluslay* mounted their scalps on a wooden hoop. When a war party returned with scalps, festivities were organized and masked dancers jumped and ran around the poles from which the trophies were hung. Scalping also is reported among the *Arara*, a little-known tribe of the lower Xingú River. They took not only the scalp, but also the ears and mounted the trophy on a hoop (Nimuendajú, 1924).

**Bone trophies.**—In countless South American tribes from the Guianas to Chile, the bones of dead enemies were made into arrow heads or flutes. The *Araucanians* cut off the arms and legs of dead war prisoners and made flutes of the long bones to celebrate their triumph. The *Yuruna* made trumpet bells out of skulls. The trophies most commonly mentioned among the Indians of Santa Marta, Colombia, Venezuela, the Guianas, Brazil, and Paraguay are tooth necklaces. These ornaments have been reported also in the Pampas, but not in Perú; perforated human teeth, however, were found archeologically on the Coast. Among the ancient *Guaraní*, old women made necklaces out of the teeth of the victims of cannibalistic feasts. *Mundurucú* warriors who had fought bravely but, because of a wound, had failed to obtain a head, were compensated with the gift of a cotton belt from which hung the teeth removed from enemy heads. Such a belt might also be given to the widow of a warrior killed in battle; its possession entitled her to community support.

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ESTHETIC AND RECREATIONAL ACTIVITIES

# ART

By A. L. KROEBER

## INTRODUCTION

Under art there are included in this review only such native productions as possess a measurable degree of intrinsic esthetic significance or value. Technology, as such, is not considered, although the technological basis which every art must have is given attention. The internal developments of the several arts, and the historic connections between them so far as known—their historic aspects—are treated, though with the endeavor to avoid merely archeologic problems and chronologic speculations.

Native South America failed to achieve any of the really great arts of human history, though several of the developments approach this stage. There is nothing in the continent that quite equals the best products of the *Maya.* However, the quality of a few South American arts, especially Chavín and Mochica in Perú, is high, and there are many others that have attained a degree of distinction. What is most lacking, on the whole, is freedom and urge of imagination. Within the range of the merely decorative, and sometimes of the symbolic as well, the arts of South America frequently evince originality and fantasy. They are feebler in adding interest and skill in representation, which would have led to products like those of the *Maya*—or Egyptians and Chinese—in which lifelikeness, an approach to the realities of nature, is attained along with the successful retention of both decorative and religious expression. The one outstanding exception in South America, the realistic Mochica "sculpture," is qualified by this being after all only a ceramic art. In general, South American esthetic expressions might be characterised as deficient on the inspirational side, somewhat partaking of the pedestrian in their quality, as if their feet remained a bit mired in the technology which is the essential predisposition of every art. The artists felt predominantly with their hands, rather than with esthetic emotion controlling manual skill.

The consequence of this tendency is that the distinctive accomplishments of South American art lie less in sculpture and painting and architecture than in the ceramic, textile, lithic, and metallurgical fields—in the industrial or applied and decorative arts. The pottery and cloth of Perú can be matched against any in the world. The ruins of buildings are more famous for the unrivaled excellence of their masonry than for their structural design. Metallic objects rarely attain much charm or profundity of form, but are often high class in workmanship. Religious motivation occasionally had a part in raising some South American art to a higher pitch—Chavín, and San Agustín in Colombia, are examples. But in other cases ritualistic purpose merely cooperated with the dominant artisan impulses to develop a repetitive, conventional symbolism, equally lacking in strong religious and strong esthetic charge.

It seems that analogous tendencies permeated the arts of verbal expression: that the ritual formula and the simple folk tale still predominated, and specifically literary forms remained rudimentary in South America. This is in line with the fact that Perú had developed the practical devices of the balance for weighing and the enumerative quipu, but not even the first approaches to writing, so that the transmission of knowledge and forms of statement were merely oral and hence fluctuating if not amorphous.

The continental peaks of achievement in the visual and tactile arts were attained in Perú, with which the inter-Andean plateau of Bolivia is included. This holds for the arts in practically all media. From Perú, esthetic and technological influences radiated for some distance southward along the Cordilleran system, less far northward, and still less into the Tropical Forest to the east. Outside the Peruvian center, it is difficult to fix on any ancient focus of high development. The Island of Marajó in the mouth of the Amazon perhaps comes nearest to being such a center, and relations to it can be traced among modern primitive tribes as far away as the foot of the Andes; but this art, so far as we know, was limited by its restriction to the medium of pottery. San Agustín, in upper Colombia, with its monumental stone sculpture, is another focus, but appears to have been a highly localized development. Northwestern South America from Venezuela or perhaps Guiana to Panamá and beyond, and southward to north Perú, was an area of intensive metallurgical developments, but its technological achievements easily outrank its esthetic ones.

There have been a number of attempts to connect the arts of native North and South America, but these seem premature, except now and then in minor or local degree. South American metallurgical techniques penetrated into Central America, perhaps had an influence in México, and no doubt carried some forms with them. But the important forms of Mexican and *Mayan* art were developed in other media than metal. Uhle, since his retirement from specific Peruvianistic studies, has been an increasingly urgent proponent of *Maya* influences on Ecuadorean and Peruvian art, even stretching connections as far as the Mississippi Valley and the Argentine; but his views have had small acceptance. Caribbean impacts on the Southeastern United States have long been suggested, especially in pottery, and the *Arawak* and *Carib* of the Antilles were offshoots from widely spread South American families. Yet Southeastern ceramics at their best are at least equal to those of the Antilles, if not superior, so that an affirmative answer, while historically and ethnographically significant, would still leave the problem of esthetic development open.

The data on the major South American arts are inextricably intertwined with archeology, because the most advanced civilizations of the continent were thoroughly liquidated by the Iberian conquests, especially in their intellectual, esthetic, and religious aspects. The consequence is that all the finest native art products of the continent are prehistoric. Minor or humbler arts have survived among some of the less-exposed primitive tribes and thus have come into the purview of the ethnologist.

## PERÚ-BOLIVIA: GENERAL CHARACTERISTICS

Ancient Peruvian-Bolivian art as a whole is characterizable as follows:

Architecture is intent on massiveness or bulk or both. Its forms are exceedingly simple: terraced pyramids, walls and enclosures, rectangular or occasionally circular structures and towers, linteled doorways, frequent niches or recesses, few windows. The column is little developed as an esthetic or structural device, the arch unknown except for some minor use in domed corbeling; exteriors are generally severe if not plain, interiors—if present at all—not less so. The emphasis is on quality of masonry in the Highlands; the Coast mostly substituted sun-dried brick, with which esthetic effects are obtainable only through surface treatment, such as paint over plaster, or arabesque mosaic. The best Highland masonry, as around Cuzco, is extraordinary, sometimes for the size of the blocks used, more often for their perfect fitting. The stones not infrequently present a polygonal face. It seems that this was due less to indifference to regularity than to the stonedresser's willingness, or eagerness, to meet problems. The finest masonry is seemingly laid without mortar—"a knife blade will not enter the joints." But much of this work has not had its interior inspected, and it is probable that in some cases only the faces were fitted so finely, the interior of the block tapering away and interstices being chinked. Second-rate walls are often laid in mud mortar, and solid interiors are usually filled with rubble. Wherever the best masonry occurs, there is usually some sculpture, and invariably there are beautifully finished utensils and receptacles of stone, with or without incision or relief. It is, therefore, no serious exaggeration to say that the successful bent of Peruvian culture was toward stoneworking more than toward architecture in our sense. Whether the stepped pyramid as a temple base was a local development or an introduction from México is uncertain. Its occurrence in Perú is essentially limited to the northern half of the country. But the absence of pyramids from Ecuador and Colombia makes it probable that not more than the idea of such structures was transmitted, at most.

Peruvian sculpture never freed itself from the stone. All statues conform to the block; they adhere remarkably to its original form; none are really free-standing. If they impress, it is through their surface decoration of clothing, headdress, or symbols. An exception must be rendered in favor of some heads, especially in the Chavín style; but an imaginative head can be wrought out of a boulder without much change of its basic shape. On the whole, the Peruvian sculptors succeeded best with reliefs—at Tiahuanaco as well as Chavín. Here again we have the stone-dresser's turn of mind: the material is something to be patiently rubbed away at from the outside, rather than attacked as if it were plastic. The most successful plastic treatment is found in the Mochica culture, and there in pottery modeled in ordinary receptacle size; hence it is reduced, not life-size or heroic sculpture. These Mochica vessels were pressed in molds—as we model an original, make a mold, and then cast it. This, however, hardly degraded the art into one of manifolding. Mediocre vessels were often duplicated, but the best specimens—like the so-called portrait heads—seem to have been found only as uniques, so that the molds were perhaps broken after one impression.

That pottery was the Peruvian's métier is shown not only by the sculptural Mochica ware, but by the excellence of paste, polish, color, and design of the ceramics of many cultures; also by the relative ambitiousness of form attempted even in early times, with nearly closed bodies, straight and curved tubular spouts, bridges, or handles, and figure modeling or relief. The pottery is so varied, and was so abundantly made, that it has served as the principal guide line to archeologists in their unravelling of periods and cultures.

No less eminent is ancient Peruvian cloth, outstanding for fineness of work, variety of techniques, and ambitiousness of design. There are no better textiles known from any part of the world. Every major basic technique, and innumerable superstructural ones, are represented. It is also of interest that in the main these are already present in the earliest pieces—between one and two thousand years ago—so that the formative stages of the art in Perú are still beyond our ken. Most of the examples are from the desert climate of the Coast: in the Sierra, and even on the North Coast, preservation conditions are much less favorable. Designs were transferred from pottery to embroidery, presumably as between Nazca and Paracas Necropolis; and again, and in the same region, from weaving to ceramics, in the Ica-Chincha culture. Tiahuanaco stone relief looks as if it might have been derived from tapestry designs. Cloth was also painted, in certain cultures, and resist-dyed. The high development of the textile art in Perú was aided by the availability of both cotton and three varieties of *Auchenia* wool, from llama, alpaca, and vicuña; as well as by the dense and sedentary population in a land much of which, although in the Tropics, required warm clothing because of altitude or Coastal fog.

Metalwork has already been mentioned as mostly made by the artisan rather than the artist. The most pleasing shapes are likely to be in copper, silver, or bronze. With gold, the desire for sumptuousness came to the fore, leading to an endeavor to expose the maximum surface, with consequent thinness of material and cramping of design. The esthetically best metal pieces are likely to be small solid castings from the Highlands (Handbook, vol. 2, pl. 58, *d–f*).

Painting, other than as an auxiliary as in ceramics, is rarely carried far by unsophisticated peoples. Perú developed one school of representative scene painting, among the Mochica. This art is sketchy and depends little on color, but represents outline, especially of action, with much spirit and considerable fidelity. Best known from pots, where it is monochrome, it occurs also in frescoes with areas of flat color (fig. 102); and it may have been used in other situations; in what medium it originated is uncertain. In other Peruvian cultures, painting is generally known only from ceramics, where it is either simple or conventionally decorative or symbolic. Public buildings of adobes seem to have been painted, usually in repetitive designs in red and yellow ocher. Painted cotton cloths are common as tomb furniture on the Coast of Central Perú during the later prehistoric period; the designs may be elaborate but are schematic, and the brushwork is poor. A very few early-period examples of painted cloth have survived from Nazca (pl. 44, *a*) and Paracas, and are much better in execution. They are semirealistic and exact in stroke; they appear to represent a transfer from pottery.

Allied to painting is pyrography on gourds (*Lagenaria*), which has Eastern and Southern counterparts (Xingú region, *Chiriguano*, *Guató*, *Calchaquí*, *Atacameño*). The best Peruvian examples known to date again come from Nazca and Paracas (fig. 101). In later periods the art was less practiced; and in the Highlands preservation conditions are so much inferior that we are uncertain whether a development there connected the pyrographies of the Coast and of the forested Montaña.

Other minor arts are inlaying, mosaic, and shell cutting. These occur in the form of metal in shell, shell in wood (Handbook, vol. 2, pls. 56, *e;* 58, *a*), turquoise in gold, combinations of shell and stone, etc. None is overly frequent or represented by large, ambitious examples such as those of México. The designs are taken from those of pottery, stone, or cloth.

Wood carving plays a moderate role in Perú, although wooden implements for agriculture and weaving have been preserved in abundance. Well-developed stone, metal, and pottery arts perhaps kept wood carving in the background. The best-known types are specialties. One of these is the quero, or tall cylindrical drinking goblet, from the southern Highlands, its surface covered with an inlay or cloissoné of lacquer. Many of the preserved specimens are Colonial in period, or even post-Colonial; the designs show an interesting mixture of old native and European influences. Similar vessels occur in the Tiahuanaco and *Inca* cultures in pottery, and elsewhere in silver or gold; but some of the pottery forms suggest an imitation of wood in the retention of a raised band around the cylindrical goblet; and the metal ones may have been shaped around a wooden core. In the late Ica-Chincha culture, large paddles or shovels had their handles or ends elaborately carved into rows of geometrically stylized birds or men, which were covered with thin sheets of precious metal nailed on; in other examples the hard algarrobo wood seems to have been left bare (Handbook, vol. 2, pl. 56, *f*). There are occasional wooden balance beams, boxes, tablets, etc. with decorative relief carving, the designs usually repetitive and possibly influenced by woven patterns. If there was wooden statuary, it has not survived time and the Spanish priests. Some preserved smaller wooden figures of late period have the full stiffness of the more conventionalized types of stone statuary, and try to make up for their lack of interesting form with red paint or shell inlay.

It may appear from the incidental allusions so far made that the finest Peruvian art flourished in the earlier periods, and that most of what is base or mechanical in quality was late. On the whole this is a true generalization, tempered, however, by a good many early uncouthnesses and stylistic underdevelopments, and by several examples of medieval or late growths of styles of considerable originality, such as those of Tiahuanaco, Ica-Chincha, and Cuzco (*Inca*). However, it is generally recognized that the styles which come nearest to attaining either grandeur or varied plasticity, those in which an inspirational quality is most manifest; those, in a word, whose products are as welcome in a museum of art as of anthropology—are relatively early: Chavín, Mochica, Nazca, Paracas. In spite of temporary recoveries and new local contributions, the general sweep through time of Peruvian art was a downward one. Manual skill was retained; but the fire burned progressively lower. The outcome at best was elegance with restraint but without profundity; at worst, an automatic pseudo-elegance.

As against this perspective, the several cultural styles of Perú will now be examined in their approximate chronological order.

### THE CHAVÍN GROUP OF STYLES: CHAVÍN PROPER

The Chavín culture is named after Chavín de Huántar, in upper Marañón drainage behind the cordillera Blanca in Ancash. The site, marked by a pyramidal stone temple, was first visited scientifically by Raimondi. The concept of a Chavín empire or culture emerges with Middendorf, was accepted but little used by Uhle, and had its chief development at the hands of Tello, who has been expertly successful in tracing the relations, especially of symbolic expression, between Chavín itself and other localities. Stylistically, however, Tello has often failed to discriminate manifestations which are pure Chavín, Chavinoid, or only problematically related, sometimes ignoring that a concept which occurs at Chavín may be elsewhere expressed through the medium of a different culture or style, such as is also an objective fact of importance.

The art of Chavín proper is lithic and is possessed of grandeur in the sense that it is charged with strong feeling, both symbolic and decorative. Its lines are at once heavy and flowing, with an effect of massiveness even in small areas; and most objects look larger and heavier than they are. Curves predominate, generally within an implicit rectangular contour. Straight lines are not altogether avoided, especially in relief, but are employed to achieve secondary contrast with the curves, or as part of the frame. The total effect is one of slow motion, often intricate but never flamboyant, without lightness of touch, every detail seemingly significant, and impressive rather than pleasing. In fact, the monstrous is not avoided. Both the type of line and the load of symbolism carry a suggestion of *Maya* art, but the resemblance is only a generic analogy; there is no evidence of historical connection, in spite of Uhle.

The freest specimens are the heads in the round, as in figure 87 (and in Handbook, vol. 2, pl. 17). Most of these have the faces furrowed, and in some the furrows or hair are converted into snakes.

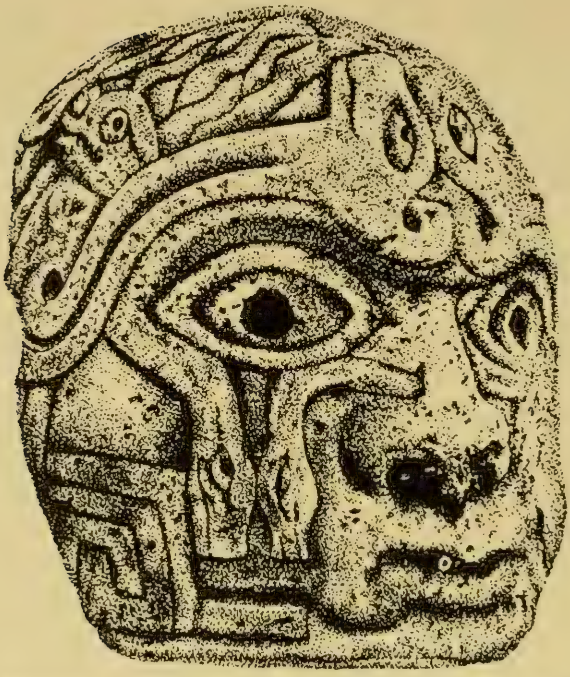

Figure 87.—Full-round stone head, Chavín de Huántar. (After Tello, 1929, fig. 22.)

A second type is constituted by the monolithic "lanzon," nearly 15 feet high (fig. 89, *right*), and the four-sided "obelisk" (fig. 88). The surface carving on the former makes it into the image of a monster-god; the latter carries four highly stylized reliefs of the jaguar god on its four sides, only one of which is shown in figure 88. A third type consists of incised or relief carvings on slabs: figures 90, 91, *top*, *bottom* (also Handbook, vol. 2, fig. 1). Of these the felines are perhaps

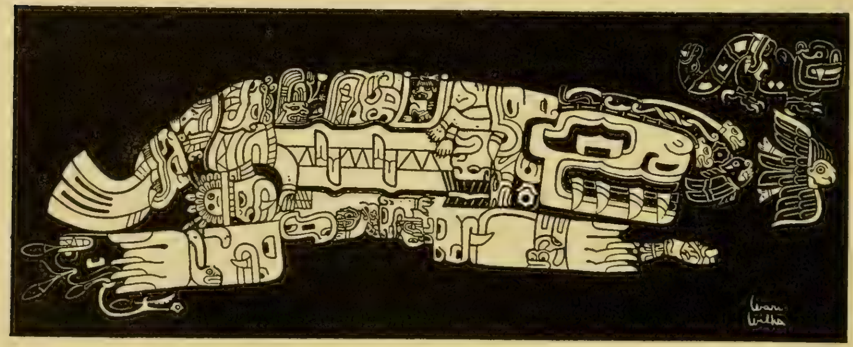

Figure 88.—Relief carving on stone obelisk, Chavín de Huántar. (After Tello, 1942, pl. 10.)

most completely characteristic, the full-spread condor (fig. 90) most readily appreciated on first approach to the art. The famous Raimondi stela (fig. 89, *left*, is allied to this group in subject and symbolism; but, as was long ago pointed out, it also has Nazca resemblances: the end-curled tentaclelike rays, the repetition of faces in the "tiara," the feline whiskers on these. It may, therefore, be regarded as pertaining to a different strain or perhaps developmental phase, within Chavín art. Finally, there are some frank jaguar representations (like Tello, 1929, figs. 27–28) whose heaviness of line and monstrosity of concept put them among the least attractive Chavín pieces.

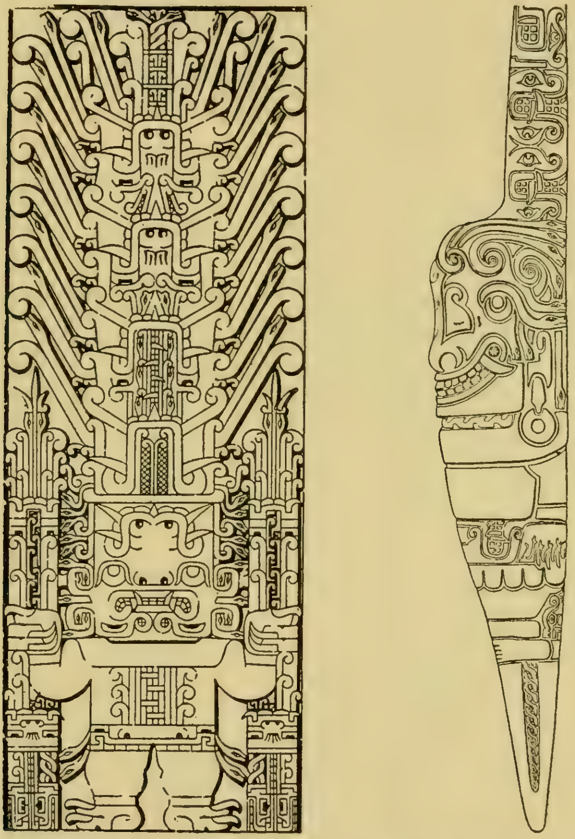

FIGURE 89.—Chavín de Huántar sculpture. *Left:* Raimondi stela. *Right:* Lanzon. (After Tello, 1923, fig. 77; and Lothrop, 1937 a, fig. 168.)

Tello (1923) has successfully analyzed the part-for-part symbolism of the more complex of these specimens. They mainly represent a feline deity, or demons with mixed human, jaguar, condor, and serpent attributes. A dominant trait is the fangs or tusks projecting beyond the lips. Kroeber (1944) has attempted a classification of all known Chavín sculpture.

Beyond these classes of stone pieces, now mostly in the Museo de Antropología at Magdalena near Lima, either as originals or in casts, the type site of Chavín proper has yielded little. Pottery is not too abundant and represented chiefly by sherds, either plain or incised (Handbook, vol. 2, fig. 3); a whole vessel is shown in plate 42, *a*. Metal has not been found at Chavín itself. It is, therefore, necessary to turn to remains from other localities, which show the Chavín style in various degrees of purity, modification, or fading away.

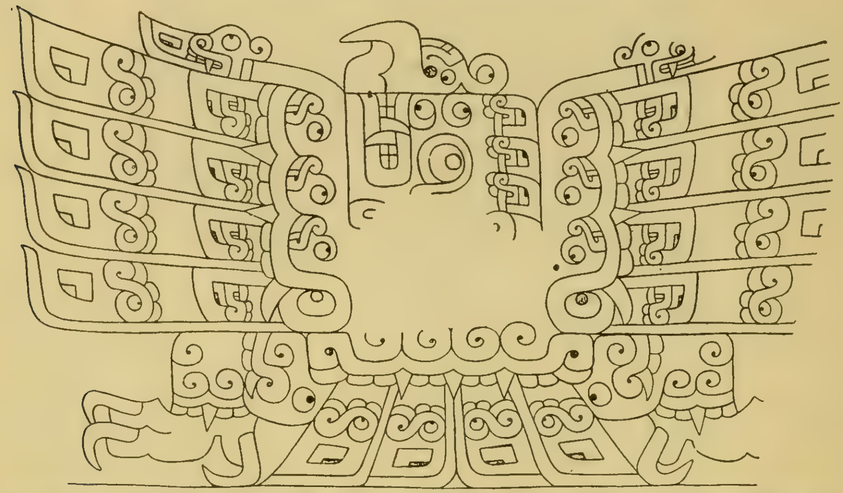

Figure 90.—Condor relief slab, Chavín de Huántar. (After Bennett, 1942, fig. 3; see bibliography, Handbook, vol. 2.)

## CHAVINOID STYLES

First of all, there is a pottery art centered in the Coastal valley of Chicama, long ago recognized by Tello from sporadic specimens and called Chavín by him, but now established by Larco Hoyle as a distinctive culture known from excavated graves, and renamed Cupisnique, from a site of first discovery. Cupisnique ceramic is a dark to blackish ware, hardly ever painted, usually either modeled or incised, highly polished, thin-walled and light in weight, but with an effect of massiveness and of derivation from stone. The most characteristic vessels have the Mochica stirrup-mouth, which could not possibly have had a prototype in stone, and must have been invented in clay. Much of the simpler pottery also has no visible relation to Chavín sculpture. Other pieces however show the pure Chavín style in their body modeling, in surface modeling, or in incised patterns (figs. 92, 93; also Hand-

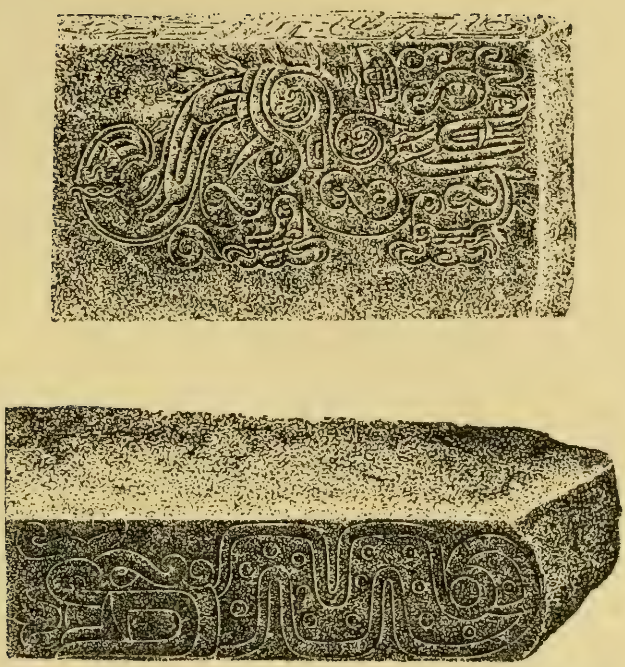

FIGURE 91.—Incised slab, Chavín de Huántar. *Top:* Feline design on face of slab. *Bottom:* Feline design on edge of same slab. (After Tello, 1929, figs. 37, 38.)

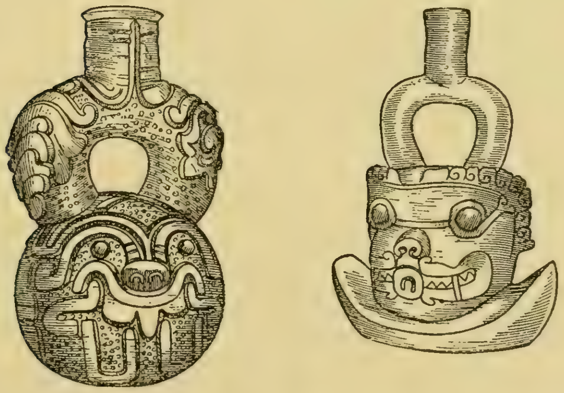

FIGURE 92.—Cupisnique pottery. (After Kroeber, 1926 a, pl. 12; see bibliography, Handbook, vol. 2.)

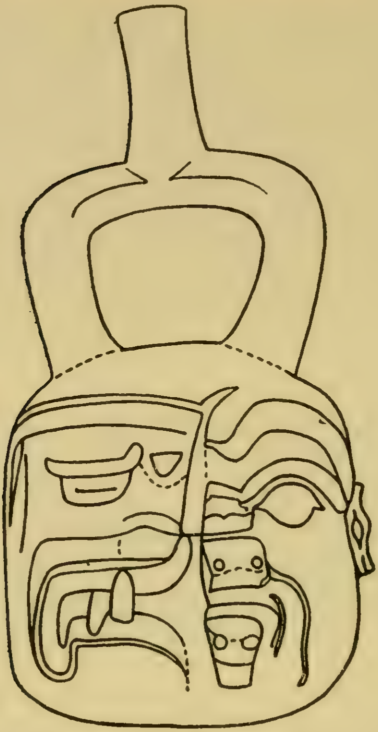

Figure 93.—Cupisnique pottery head. Right and left halves in different styles. (Redrawn from Larco Hoyle, 1941, cover.)

book, vol. 2, pls. 61, 63, 64). Some of these, like figure 93, are veritable masterpieces of ceramic sculpture. Associated with this pottery in graves are bone carvings in the same manner (fig. 94; also Handbook, vol. 2, pl. 62). Minor stone carvings (as in Larco Hoyle, 1941, figs. 141–148), are related in style, but largely of unassociated provenience. It is therefore clear that Cupisnique is a Coastal culture

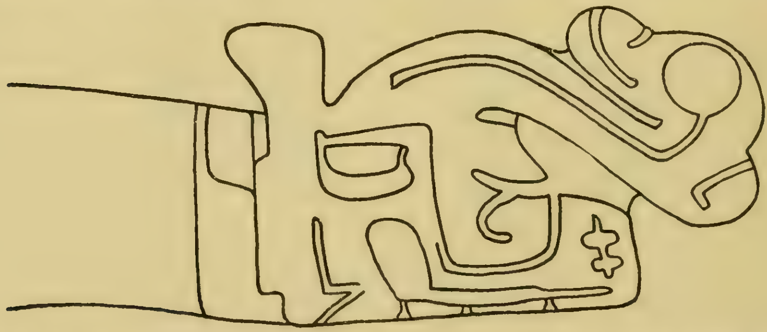

Figure 94.—Cupisnique carved bone handle. (Redrawn from Larco Hoyle, 1941, fig. 163.)

with its art expression primarily in pottery, closely related to the Chavín culture of the Highlands with its sculptural stone expression. Larco seems to have shown by grave superpositions that Cupisnique is definitely anterior to the well-known Mochica, as Tello has always contended for Chavín.

A very small strain in Mochica pottery—not over 1 percent, quantitatively—shows incised felinoid designs which, though simplified, are indubitably akin to those of Chavín (fig. 95), while occurring on vessels which are otherwise pure Mochica in execution and associations. These scattering cases are obviously explainable as carry-overs from the preceding Cupisnique-Chavín culture of the same area.

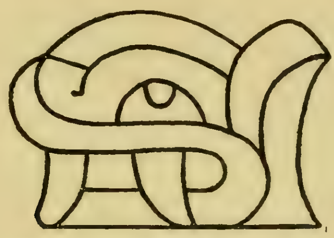

FIGURE 95.—Chavinoid design, incised on Mochica jar. (Redrawn from Tello, 1923, fig. 64, *a*.)

To the south of Cupisnique on the Coast, Nepeña Valley contains two sculptural monuments of Chavín type, Puncurí and Cerro Blanco. The former is a supersize clay idol of an unbeautiful, monstrous catdeity set in front of a flight of steps (fig. 96); the latter, a colored

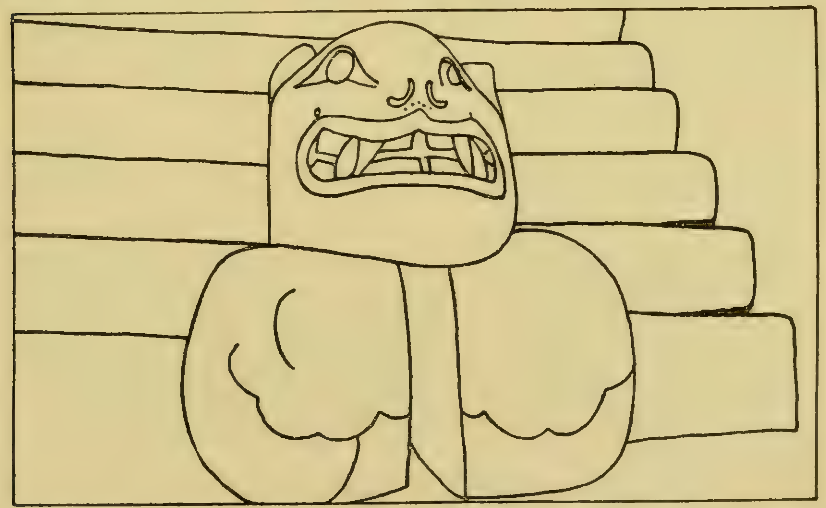

FIGURE 96.—Chavinoid idol of clay, Puncurí, Nepeña Valley. (Redrawn from Larco Hoyle, 1941, fig. 7.)

plaster relief or adobe (fig. 97) in pure and characteristic Chavín decorative design.

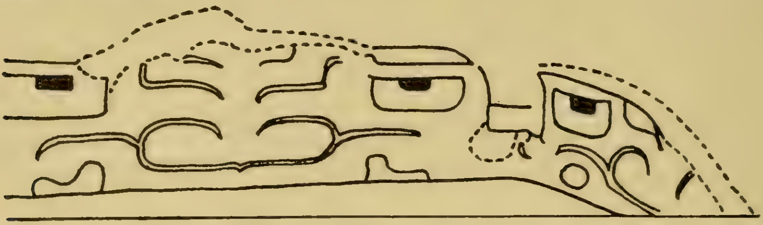

Figure 97.—Chavinoid corner wall decoration, painted stucco, Cerro Blanco, Nepeña Valley. (Redrawn from Larco Hoyle, 1941, fig. 8.)

In Casma, the next valley south, are Cerro Sechín and Sechín Alto. The former is an adobe platform faced along its front with an impressive row of natural or semidressed stones consisting alternatingly of upright "stelae" and of squarish slabs. The slabs are carved with trophy heads; the stelae, with either conquering warriors, or the conquered, or conventionalized heads, eyes, or vertebrae (fig. 98). The execution is simple and expressive, fairly realistic, and possesses few of the typical Chavín attributes, either of decorative line or of theme, such as the cat head, fangs, or claws. Specifically, the style is nearly unique in Perú, and with only general relation to that of Chavín. The Sechín Alto monuments have not been adequately published; they seem decorative rather than representative.

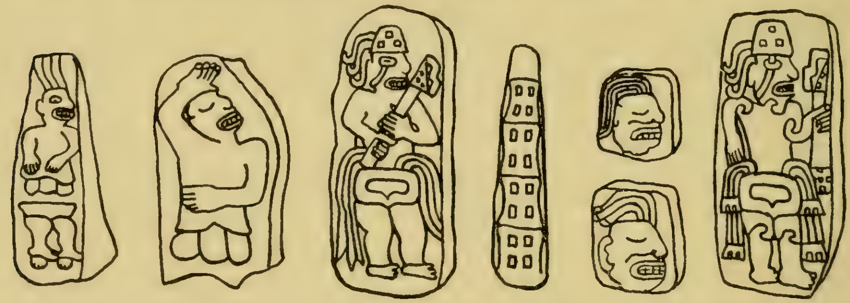

Figure 98.—Carved Chavinoid stelae *j, g, e, c, b,* Cerro Sechín, Casma Valley. (After Tello, 1943, pl. 17; see bibliography, Handbook, vol. 2.)

Also in Casma Valley is Mojeque, a pyramidal ruin where Middendorf first recognized the Chavín style outside Chavín. Colored-clay or stucco relief ornamentation of snakes (fig. 99, *left*) is in good Chavín manner.

As far south as Supe, several valleys beyond Casma, scant remains of an early culture were long ago found by Uhle, who recognized their importance, but construed them variously as due to fishermen, as "primitive," and as Nazca-derived. The pottery proves them to be Chavinoid; and the incised design from a bone tablet (fig. 99, *right*) is in complete Chavín manner.

North of the specific Cupisnique area on the Coast, Chiclayo has yielded an incised strombus-shell trumpet (Tello, 1937), with a Chavinoid design more akin to Cerro Sechín than to Chavín itself; an incised stone jar (fig. 100, *left*), of similar affiliation; and, farther up the valley, at the foot of the Sierra, is Chongoyape, where Cupisnique type jars (Handbook, vol. 2, pl. 18, *a*, *c*) were found in association with embossed and cut-out gold (pl. 45, *d*, *e*, *f;* fig. 100, *right;* also Handbook, vol. 2, pl. 19, *bottom*, *left*, and *right*). The designs of this gold vary somewhat in the degree of their resemblance to specific Chavín; but they are all unquestionably Chavinoid.

On the South Coast, Paracas is currently cited as related to or derived from Chavín. Of the two Paracas cultures—both are non-

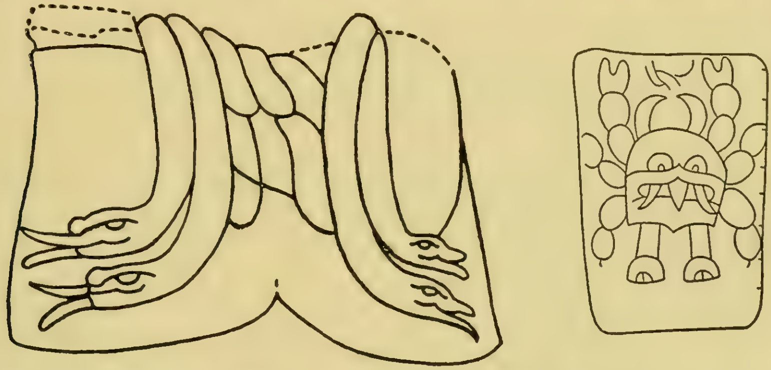

FIGURE 99.—Chavinoid decorations. *Left:* Clay wall stucco in four colors, Mojeque, Casma Valley. *Right:* Bone palette, Supe. (*Left*, redrawn from Tello, 1943, pl. 13 (see bibliog., Hdk. vol. 2); *right*, after Kroeber, 1944, fig. 5.)

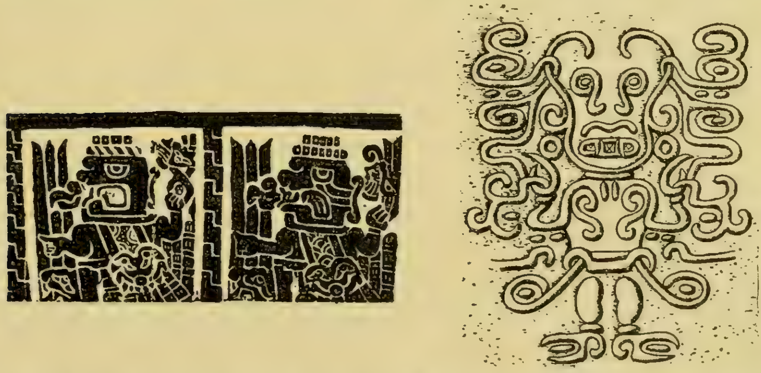

FIGURE 100.—Chavinoid designs. *Left:* Figure carved on stone jar, Chiclayo, *Right:* Repoussé goldwork, Chongoyape. (After Kroeber, 1944, pl. 33; and after Tello, 1929, fig. 109.)

lithic—that of Cavernas (Cerro Colorado) includes extraordinary ceramics, painted, "inlaid," negative, and incised, of which some pieces show very definite Chavín affinities in theme or in line (pl. 42, *g*, *h;* also Handbook, vol. 2, pls. 20, 21, *d*, *e*). Similarly, "pure" Chavín designs occur in gourd pyrography (fig. 101). By contrast, the culture of Paracas Necropolis (Cabeza Larga) has few if any Chavín affinities except speculatively via the Nazca culture.

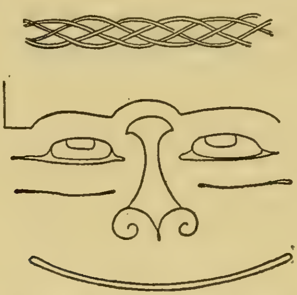

FIGURE 101.—Chavinoid design pyrographed on gourd. Paracas Cavernas culture at Ocucaje. (After Kroeber, 1944, fig. 5.)

In the interior, the art of the Callejón de Huaylas, the valley of the upper Santa, has sometimes been included in the Chavín sphere, because of its geographical proximity; but positive relations are meager, and the art is best considered separately, as below. The same may be said for Pucara.

The concept of Chavín has become proteanly elusive in Peruvian prehistory because it has been made to include three different things: an art style, a religious cult, and a culture. The style is not only indubitable, but perhaps the greatest evolved in Perú. It is found characteristic at the site of Chavín, and certain specific radiations of it can be traced outside, as at Cupisnique and Nepeña, with more tenuous reflections or partial absorptions of it elsewhere, as at Sechín and Paracas. The religious ideas and symbols which occur at Chavín recur more widely outside, and in part extend into subsequent times, but in a variety of stylistic manifestations. Whether the Chavín temple was the actual historic focus of this cult, or only its esthetically highest expression, is not known. The culture also has a kernel of indubitable reality, and it must be early; but nothing is gained by stretching it into a hypothetical construct which includes everything primordial or notable in Perú. From the point of view of art, perhaps a third of the remains which have been associated with Chavín possess but slight stylistic relation to it, and another third only a partial or remote one.

## MOCHICA-CHIMU STYLES

The North Coast of Perú produced the Mochica ceramic modeling art—the highest in the continent. It has also been called Muchik, Proto-Chimu, and Early Chimu. There are several related styles; and among these, Late Chimu, or Chimu proper, is a heavily altered recrudescence of Mochica.

Mochica is pre-Tiahuanaco in period, is oriented toward representation rather than symbolism, and excels in painting as well as modeling. It built massively but clumsily in adobes, developed no stone sculpture at all, carved small objects in bone, shell, and perhaps wood, and used cast copper and gold. Its textiles have perished, except for scraps. It centered in Chicama and Moche Valleys, with extensions southward to Virú, the lower Santa, and probably Nepeña Valleys, but only sporadic intrusions, if any, north of Chicama.

The art pottery is largely funerary, and reduces to very few fundamental vessel shapes. This is in contrast to the endlessly exuberant variety of added modeling and painting. The most characteristic of these shapes is surmounted by the "stirrup-mouth," a semicircular tube from which rises a cylindrical spout of the same diameter; the body varies from globular or subglobular or cylindrical to heads or bodies of men and animals, or vegetables; relief or painting may replace the three-dimensional modeling. About equally frequent are fairly wide-mouthed jars partly modeled into the form of a face. Two less-common distinctive types are a large, flat-bottomed bowl with concavely flaring sides, and a handled dipperlike form. Other bowls, double-bodied jars, etc. occur rarely. The ware is burned red, and is usually painted in red on creamish slip to accentuate contrasting surfaces within the modeling; occasionally, black touches were added, usually after firing. A fair percentage of stirrup-mouths, and most flaring bowls, lack modeling altogether, substituting designs or scenes painted in red outlines or masses on the flat slip, in the free, vigorous profile manner of the frescoes (figs. 102; 103, *top*, *bottom;* 104). This painting is as expressive as the modeling, and almost as

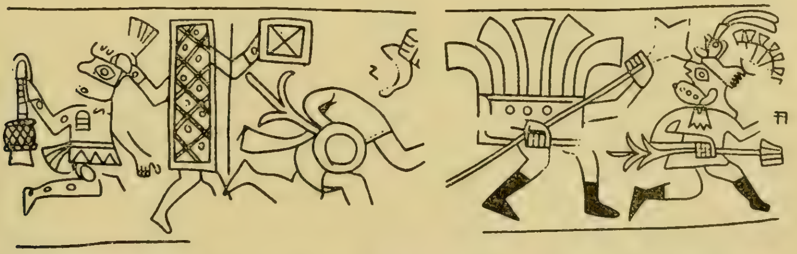

FIGURE 102.—Mochica wall frescoes. Moon pyramid. (After Kroeber, 1930, pl. 15; see bibliography, Handbook, vol. 2.)

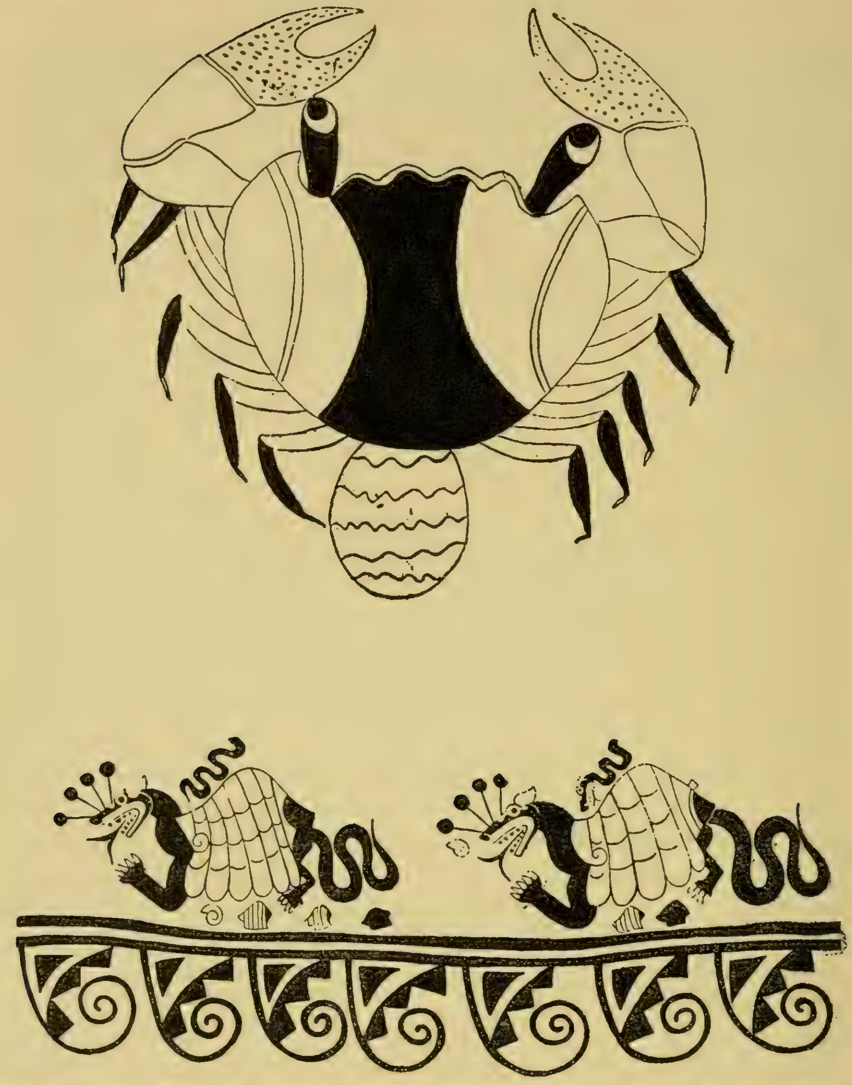

FIGURE 103.—Mochica painted pottery designs. *Top:* Crab. *Bottom:* Snail. (After Larco Hoyle, 1938, p. 66, and 1939, p. 47.)

realistic. Sometimes low relief takes the place of painted design, or accompanies it. Perhaps one vessel in 30 or 40 was smoked black, bucchero negro; and in that case it was modeled, or occasionally incised. The surface of nearly all vessels is well polished. All the more elaborate ones were pressed in molds and the halves joined; but there seems to have been little repetitive manifolding except in simpler jars. The general technological competence of the ware is extremely high.

The peak of this art was attained by the so-called portrait heads. Whether they are portraits in our sense—attempts to depict what is peculiar to one individual as distinct from all others—is uncertain. Some authorities so believe; but the Mochicas may have been like the Greeks, Egyptians, and Chinese, in being more interested in the type. However, they made the type astonishingly lifelike (pl. 42 *c*, *d*), and often ideal as well. They were equally successful in depicting deformities, mutilations, paralysis and other diseases, the abjectness of prisoners (Handbook, vol. 2, pls. 30, *e;* 31, *b*, *e;* 70, *f*), punishments, ironical as well as macabre caricatures, and erotic scenes. They had the gift of seizing and reproducing the salient feature or posture. Strict anatomical realism is often violated: many heads are disproportionately large for the body, or eyes for the face; but this becomes evident only on analytic reflection. There is little representation of the fantastic or chimerically symbolic, as in Chavín art. The principal Mochica fusion of animal and human indicates gods by four tusks or fangs projecting from the mouth of an otherwise human face. Preference is for a single, free-standing head, body, or animal, less commonly for two or three figures; groups of five or six small figures occur, but chiefly in scenes of religious sacrifice, and may represent an influence from the Callejón scene-modeling (see below)—unless perhaps on the contrary, the Callejón-Recuay ware selected out this minor strain of Mochica for its own specialized development. Plates 30 and 31 of Volume 2 express the Caucasian collectors' preponderance of naive interest in houses, boats, action, and genre subjects. The Mochica showed themselves as thoroughly possessed of true sculptural feeling in preferring the plastic movement or permanent form at rest (Handbook, vol. 2, pl. 31, *a*, *b*, *d*, *e;* 70, *h*), to "story" (Handbook, vol. 2, pl. 30, *c*, *f;* 31, *g;* 70, *c*, *e*). Certainly all their esthetically best modeling, as well as the bulk of all their work, expresses form rather than event.

The Mochica were scarcely less successful as painters, both in monochrome red or brown on the cream slip of their pottery, and in larger flat-color frescoes of which a few fragments have now and then come to light (fig. 102). In their more ambitious painting, they prefer couples, groups, or processions (fig. 104). Representation is almost wholly profile. In contrast with the modeling, action, not rest, is depicted; and the action is generally rapid, often vehement. Background is confined to the most essential indications. Animals, imaginary and fantastic (figs. 103, *bottom;* 104) as well as free-realistic (fig. 103, *top*), are also represented; and from these there is a transition to merely decorative and geometric figures, including the step-spiral modification of the Peruvian-Mexican step-fret motif. Abundant examples are conveniently assembled in Baessler, in Larco Hoyle's volumes on

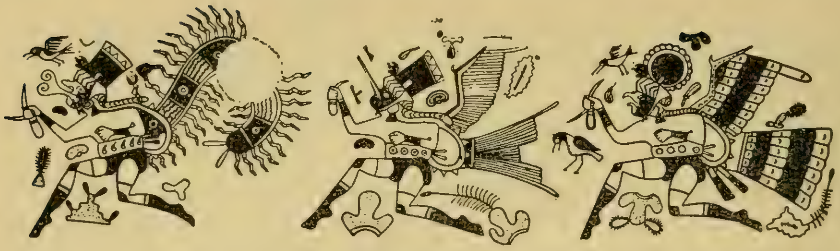

FIGURE 104.—Mochica painted pottery design. Anthropomorphized running insects. (After Larco Hoyle, 1939, fig. 95.)

the Mochica (1938–39), as well as in volume 2 of the Handbook, figures 20 to 22. The painting stroke was firm, swift, and sure—indicative of a control parallel to that of the modeler. The fresco painter outlined his figures with long, sweeping incisions, then filled in areas with flat-color masses in several hues.

The miniature arts in shell, bone, inlay (pl. 45, *a;* also Handbook, vol. 2, pl. 70, *d*, *f;* 71, *d*, *f*), and wood are less well known, and seem to have aimed rather at repetitive pattern (fig. 105) that at representative realism, and consequently differ less from Chimu and other Late work than does the painting. But the available examples also indicate sure technological control combined with feeling for pleasing form.

Mochica metalwork includes representative forms generically like those modeled in pottery (pl. 45, *a*, *á*, *b*, *c*). Specifically, perhaps, they are most like the semiformalized pottery figurines (Handbook, vol. 2, pl. 31, *c*), which fail to attain—in fact, do not aim at—the vigorously expressive realism of the best modeling on pottery vessels. There was a relation between the two media, however: the lizard of plate 45, *a*, is the exact counterpart of lizards modeled in relief on stirrup-spout jars. This Mochica metallurgical art is important in its technological foundation, which controls copper, gold, gold-copper

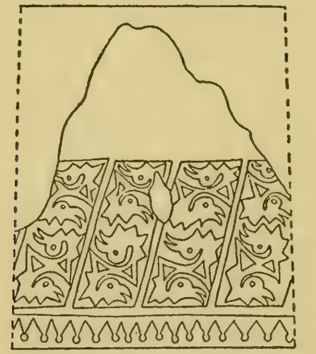

FIGURE 105.—Mochica conventional carving on bone earplug, Moche. (After Kroeber, 1944, fig. 8.)

tumbaga alloy, a little silver, the processes of smelting, casting, soldering, and gilding, in addition to cold working. It still wholly lacks bronze, owing to distance from the Bolivian supply of tin; but it is the earliest well-developed genuinely metallurgical art as yet known from Perú, and, therefore, possibly the earliest in the continent. At any rate, it marks a significant advance over the mere beating out, cutting, and embossing of gold, which seems to have been the sole method of working metal in the preceding or contemporary cultures of Chavín, Cupisnique, Nazca, Paracas, Early Supe, etc. Resting on its relatively advanced technological skills, the Mochica metal art is superior to its predecessors in esthetic values also.

It now seems established through Larco Hoyle's work (1938–39, 1941) that Mochica culture and art were preceded on the spot by Cupisnique and probably also by the recently discovered Salinar culture. As we have seen, Cupisnique pottery already possessed the stirrup-spout as well as the modeled face and body; and from it can be derived the occasional Chavinoid incised designs of Mochica (fig. 95). Salinar pottery is much less fine esthetically than either Cupisnique or Mochica. But it is wholly ceramic and nonlithic in its handling and feeling, and is free also of the symbolic designs and religious implications of Cupisnique. It is a red ware, sometimes painted in white, and it attempts to model a number of Mochica subjects—heads, seated figures, animals, birds, fruits, houses, and even erotic scenes, with and without stirrup-mouths. It looks like a formative, groping style which had freed itself of most Chavinoid influences, but not yet attained the patterning of Mochica. If Salinar proves to have been the direct ancestor, Mochica not only developed Salinar impulses further, but eliminated some of its forms, such as the figure-bridge-and-spout, certain vessel shapes, and decoration with appliqué buttons. Such a process of channeling elimination would accord well with the selective character of Mochica art, which throughout exercised its enormous inventive wealth within a quite limited frame of materials, techniques, and basic shapes. As an art, Mochica is not exploratory of new paths, but a culmination, reveling in the variety of what it can achieve with its accepted limited resources.

The proto-Mochica-like quality of Salinar is well shown in plates 66 to 68 of volume 2 of the Handbook.

Outside its own territory, Mochica art exercised little traceable influence. There can be cited only the already-mentioned small-group modeling of Callejón-Recuay, where the direction of influence is unproved and may well have been into Mochica; and a Cursive Modeled or Abigarrado pottery, represented by sporadic undated but presumably post-Mochica pieces from the Coast showing both Recuay and

Chimu resemblances in form in addition to their own distinctive painting.

The Mochica culture, and certainly the style, seem to have crumbled under the impact of influences carrying a definite Tiahuanaco component. Thereafter, the Chimu style arose, and held sway until the Spanish Conquest, with the further injection into it toward the end of a Cuzco-*Inca* ingredient. In the main, Chimu culture is part of the generic "Late" pre-Columbian culture of the Coast, and its art must be understood in that context. But its ceramics show so clearly which features Chimu retained from Mochica, which it received from the Coastal Tiahuanacoid, and how it combined these and added its own reemphases, that a brief account is in order here.

Chimu pottery continues much of the Mochica modeling and certain vessel shapes, especially the stirrup-spout device. It has given up the dipper, the flaring bowl, the face jar, and painting of representative scenes. It has enormously multiplied the frequency of the formally double-bodied vessel. It has abundantly embodied forms received from the preceding Tiahuanacoid wave: the double-spout and the figure-bridge-and-spout. From the same source comes its characteristic nonrealistic surface modeling done with molds—"goose flesh" relief stippling, for instance, arched panels, and stiff full-face representations of deities. Plates 37, 40, and 41 in Volume 2 show this progressive transformation of Coastal Tiahuanacoid ceramics into the full Chimu of plate 49 (also pl. 43, *f*, in this volume). Chimu ware is 80 percent black; the occasional painting is secondary, and rather meaninglessly decorative. The Mochica portrait heads are gone—replaced by stereotyped faces and figures. Some of the Mochica themes persist, even occasionally the erotic scenes. But the subjects are as eclectic as the origins of the art. Chimu ware has an old facility, sometimes elegance, but it is shallow, done without feeling, and its taste tends to be superficial. It is indeed a basely altered Mochica, innovated at most points for the worse. Chimu and Mochica were regarded as one art as long as collections were assemblages of pothunters' offerings. It was Uhle who recognized their stylistic difference, then sought and found historic confirmation of the difference by his excavations.

Chimu came so much later than Mochica that fair samples of its textiles have been preserved. They seem to be much like those of the Late Period elsewhere on the Coast. Stone sculpture got no more hold than it had among the Mochica. There are some wooden figures, shell-inlaid, but crude in posture and form; and some carved handle ends flowing in easy curves but repetitive (Handbook, vol. 2, pl. 56, *a*, *b*). Architecture was still in mudbrick (Handbook, vol. 2, pl. 51), with relief friezes or arabesques replacing the Mochica frescoes. These friezes may be conventionally "representative" (figs. 120; 121, *left*) or frankly geometric (Handbook, vol. 2, pl. 52, *bottom*). Copper, silver, and gold were abundant. Gold objects were sometimes elaborately incised or repoussé (fig. 121, *right*); but Chimu two-dimensional form is stiffer than the ceramic three-dimensional, and the inherent absence of taste is even more conspicuous. The metalwork, like the pottery, is best when frankly geometric or meaningless; as in plate 50 of Volume 2, of which the gold is from Huarmey, at the southern periphery of the Chimu area.

Chimu occurs in the same valleys as Mochica, and in addition in the coastal valleys to the north from Pacasmayo to Piura and Chira. Local variations have not been systematically inquired into, but appear not to be great, except that Piura-Chira in the far north shows less blackware, more painting, and some special proclivities in modeled pottery forms. No sure equivalents in time of pre-Chimu art and culture have yet been found in the north Chimu area, except for the scattering Chavinoid discoveries at Chongoyape, Chiclayo, etc., already mentioned. South of the old Mochica territory, Chimu culture was never dominant, but occurs in patches or among local wares, or its influence is discernible, decreasingly, as far as Lima and Pachacamac, and scatteringly beyond. Compared with the sharply defined and areally limited Mochica art, it was a diffuse style, intrinsically and geographically, as it was a shallow and facile one. Toward its close, *Inca* influences appear spottily in Chimu, usually as a blend or hybrid of the two styles.

The history of art development on the pre-Caucasian North Peruvian Coast accordingly consists of the succession of half a dozen sharply differentiated styles: Chavinoid Cupisnique, Salinar, Mochica, Coastal Tiahuanacoid, Chimu, and *Incaized* Chimu; plus phases or substages, such as Bennett's Tiahuanacoid A and B, Larco's five phases of Mochica; plus also imported styles or wares which remained predominantly foreign (Negative, Cajamarca, Abigarrado). Certain shapes (stirrup-mouths, flat bases) and certain proclivities (modeling) persisted in the area throughout the thousand or more years involved in the developmental sequence. Yet Cupisnique and Mochica were stylistically radically distinct; so was the introduced Tiahuanacoid; and while this last never became exclusively dominant in the region, it did succeed in warping Chimu well away from Mochica in outlook and spirit.

## NAZCA AND PARACAS STYLES

The Nazca and two Paracas styles are distinct but affiliated, and occur in the same area, the south-central Coast. They are all early in period—pre-Tiahuanaco; use only hand-made conical adobes; and are without metals except for cold-worked nugget gold. They lack architectural structures and stone sculpture, but produced excellent pottery and extraordinary textiles.

The Nazca culture centers in the Río Grande (Nazca) Valley, but is found also in Ica to the north—where, in fact, it was first discovered—and, in progressively diluting form, in several valleys to the south, probably as far as Camaná. It is notable for its pottery, which is often considered as rivaling Mochica ware in quality. It is, however, entirely distinct, attempting only minimal modeling, but specializing on polychrome designs. These vary from pictorial to symbolic, but are never genuinely realistic in the Mochica sense. The ware is fine-grained, thin, metallic, highly polished, and carries from three to eight colors, including a bluish gray. The color combinations are definitely harmonious. The most characteristic shape is the double-spout, a globular vessel from which project two short vertical tubes connected by a little bridge. This, like the Mochica stirrup-spout counterpart, is a water container designed to reduce evaporation while facilitating smooth pouring.

The Nazca style is divided into phases A and B, with a transition AB or X. These phases have not been related stratigraphically, but occur separately, in "purity," in small sites, and A is put earlier on grounds of stylistic development by nearly all Peruvianists. It has fewer forms, fewer and more somber colors, and a narrower range of designs: zoomorphic demons, birds, fish, fruits, trophy heads (pl. 42, *e;* also Handbook, vol. 2, pl. 25, *a*, *b*, *c*, *f*). Phase B adds more specialized shapes, such as a tall cylindrical goblet, and a flattened double-spout; more colors, tending toward pastel tints; and a whole series of new designs, such as anthropomorphic deities or spirits and rows of women's yellow faces with almond eyes (pl. 42, *f;* Handbook, vol. 2, pl. 24, *d*, *e*, *g*). Designs of B tend toward the flamboyant and exaggerated, as in the multiplication of faces on demons, and in providing them with tentaclelike rays—already mentioned as occurring also on the Chavín Raimondi stela.

Toward the end, Nazca B degenerated into Nazca Y—a cruder ware, often unpolished, hastily painted, and with designs sometimes meaninglessly degenerated, as of detached tentacle-heads superficially resembling stars or blobs. Apparently associated in time are vessels and ornaments tending toward the Tiahuanaco or other Highland manner (Handbook, vol. 2, pls. 24, *i*, *k;* 25, *d*, *e*, *g*). Nazca A has been found only in Nazca and Ica Valleys. The B phase, especially as it verges into Y, and including local variants, has a much wider distribution, both in the South Coastal valleys and in the region of Ayacucho in the Sierra. In the latter, "Chanca" ware seems to carry a mixture of Highland and degenerate Nazca design. The

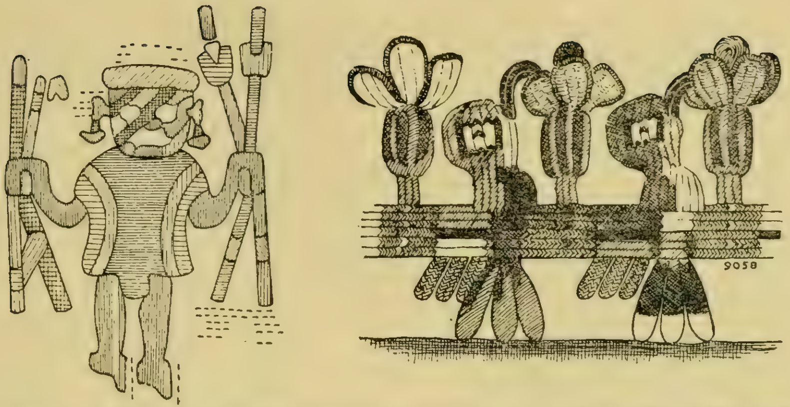

FIGURE 106.—Nazca embroidery and needle-knitting. *Left:* Embroidered figure. *Right:* Needle-knitted flowers and hummingbirds. (After O'Neale, 1937, pls. 58, 62.)

farther the Nazca style is found from its presumable center of origin, the more diluted it seems to have become.

Nazca gold, which is simply beaten out, cut, and sometimes respoussé, occasionally outlines or carries designs taken from the ceramics; so does the calabash pyrography. Textiles, which preserve excellently on the Southern Coast, are exceedingly fine technologically and in colors, but do not quite approach Paracas Necropolis embroideries in elaborate sumptuousness, though they may be their simpler prototypes. Plate 44, *a*, shows hummingbirds painted on cloth—a presumable transfer from almost identical pottery painting. Figures 106, *left*, and 107 show an embroidered figure and band from Nazca; figure 106, *right*, a needle-knitted fringe of flowers and hummingbirds.

The barren peninsula of Paracas, between Pisco and Ica Valleys, contains the adjacent type sites of two cultures: Cavernas (or Cerro Colorado) and Necropolis (or Cabeza Larga). Both are practically uninhabitable burial sites. The dwelling sites of both cultures are

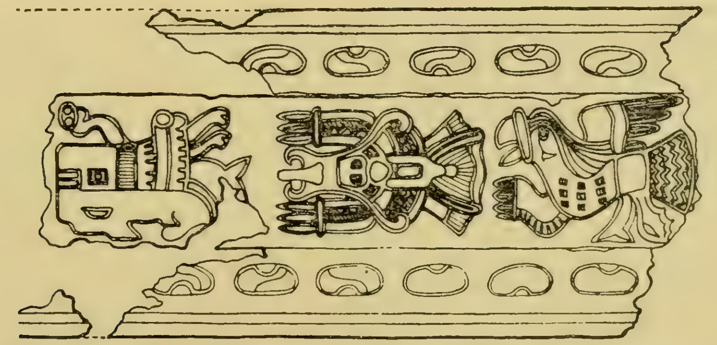

FIGURE 107.—Nazca embroidered band. (After O'Neale, 1937, pl. 57.)

unknown; in fact, no other cemeteries have yet been discovered, except one of Cavernas type at Ocucaje in Ica Valley. The relations of both cultures are therefore at present intelligible almost wholly on stylistic grounds.

The Paracas Necropolis art may be a derivative from that of Nazca, with ceramic designs transferred to wool embroideries. These are the famous "Paracas textiles," unsurpassed in fineness and richness of design and color (Handbook, vol. 2, pl. 22). The most sumptuous are rectangular mantles, bearing aligned isolated figures of gods, impersonators, demons, or warriors, either in a wide border surrounding an empty panel, or in the panel itself. While the embroideries are of wool, their sheer background is of cotton. Other fabrics have wool weft on cotton warp. The figures attempt any and every curve. This is of course atypical of textiles; and a derivation of the designs from those of Nazca painted pottery is therefore a natural supposition, especially as the representations have considerable similarity (fig. 108). This conjecture is strengthened by the fact that Nazca embroideries, as just stated, show a considerable development in the direction of the more splendid Necropolis ones. Also, there are known one Necropolis mantle which is painted instead of embroidered, but otherwise in the typical style, and a Nazca fragment painted with hummingbirds (pl. 44, *a*). The development of Necropolis textile designs out of Nazca style is thus plausible, even though as yet unconfirmed by archeological associations or positional relations. Compare Paracas figure 108 with figure 106 from the Nazca culture.

Necropolis pottery also looks like a development out of Nazca, though in an inverse direction: it has lost its designs. It is a plain ivory-color ware, favoring the double-spout jar, but in a flattened form, with long slender spouts (Handbook, vol. 2, pl. 21, *a*, *b*, *c*): the effect is one of refined, specialized, weak elegance, a dead end of stylistic development.

Paracas Cavernas, on the contrary, is likely to be earlier than Nazca, or at any rate than Necropolis. Its textiles show about the same degree of development as Nazca; both tend to "geometric" designs, as against the "realistic" embroideries of Necropolis. The Cavernas pottery contains a definite strain of Chavín design, as already mentioned; sometimes in incised, sometimes in painted design (pl. 42, *g*, *h;* and Handbook, vol. 2, pls. 20; 21, *d*, *e*). Much of the pottery is unique in being a heavy ware with the outer surface and design covered with a thick, apparently resinous pigment applied after firing of the vessel. This technique makes possible certain colors, such as green, which are absent from all other Peruvian ware and are rare in ceramics anywhere. The technique was presumably transferred to pottery after being developed in some other medium: wood, or perhaps gourds.

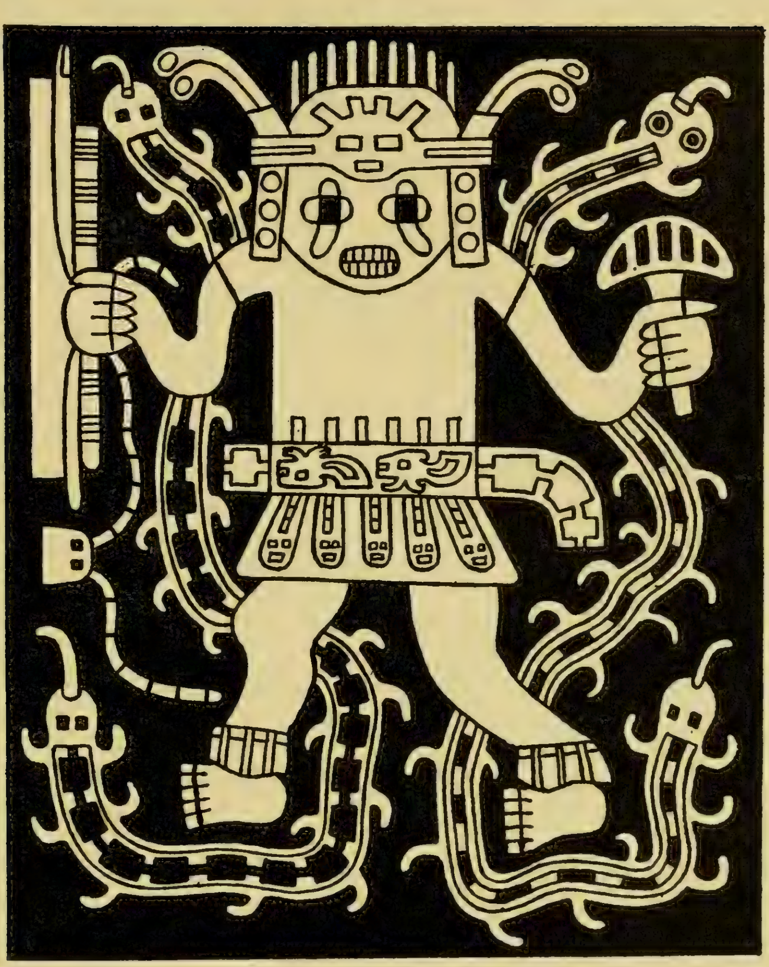

Figure 108.—Paracas-Necropolis embroidered figure. (After Tello, 1940, fig. 8.)

But other Cavernas ware is prefire-painted, both positively and negatively, or is incised on solid black. The shapes vary equally widely: the double-spout occurs, but is not standard as in Nazca; and there is some modeling of men and animals. Design is also variable; it is therefore difficult to define, except by saying that it tends to consist of bold, decisive, free-standing figures, often of birds. All in all, Cavernas pottery has not settled down into special grooves of competence, such as characterize Necropolis, Nazca, and Mochica. Cavernas is still experimenting in many directions. It is, however, not in the least a fumbling art; it possesses control, and its touch is sure. With its striking diversity, Cavernas art is difficult to characterize on the basis of the few dozen vessels that have as yet been discovered. In spite of its indubitable Chavín and possible Nazca relations, it is an art growth of unusually independent vigor.

### TIAHUANACO STYLE

Tiahuanaco is a famous architectural and sculptural ruin with associated pottery, near Lake Titicaca in the Bolivian Highlands. The Tiahuanaco style is very definite. Its distribution in the Sierra seems to be restricted, except southward into Bolivia. But the Peruvian Coast from Arequipa to Trujillo almost everywhere shows a period of specific Tiahuanaco influences, in pottery, textiles, and metals. This Coastal Tiahuanaco manner gathered into itself certain new traits which were unknown at Tiahuanaco, such as the flaring-double-spout pot, for instance, which seems derived from the parallel-double-spout pot of Nazca. The resultant hybrid style appears then to have flowed northward along the Coast, picking up additional local features on the way, such as, for instance, "gooseflesh" relief stippling in panels. This "Tiahuanacoid" art of the Northern Coast, with only a minor proportion of Tiahuanaco-derived features left in it, but these indubitable, certainly followed upon the Mochica art in time, and perhaps displaced it. Out of it in turn there grew, along with some resurgence of Mochica forms and external manner, the Late Chimu style already discussed. North of Chicama, no objects in specific Tiahuanaco style have been found, nor any separate deposits in Coast Tiahuanacoid style; although this whole area as far north as Piura came under the influence of the Chimu culture with its Tiahuanacoid ingredient. Attempts to trace Tiahuanaco resemblances in the pottery of the central Ecuadorean Highland also are unconvincing.

Coast Tiahuanaco pottery comes in two manners: a hard, smooth, finished ware tending toward fairly elaborate designs executed with care in four, five, or sometimes even six colors; and a softer, roughly made, unpolished ware, with simple, sloppy designs in three or four colors. Since the second manner seemed decadent, Uhle called it "Epigonal," meaning thereby subsequent as well as inferior. But even at the time of his distinction of them at Pachacamac, and subsequently, the two manners have been found associated, sometimes in one and the same grave. Epigonal, if the name is retained at all, therefore denotes merely a base or low-grade variant of Tiahuanaco, without necessarily any time difference. The two strains or manners have of late also been called Coast Tiahuanaco A and B. Examples of the A or full-standard strain are shown in Volume 2, plate 39, from Pachacamac; of B or Epigonal, in Volume 2, plate 40, *a–c*, from Ancón Necropolis and Pachacamac; and Volume 2, plate 44, *a*, *b*, from Ica; of "Red-White-Black," either still mixed with Epigonal or extricated from it, in Volume 2, plate 40, *e–h* (*h* being the "parent" Red-White-

Black) from the Central Coast, and Volume 2, plate 41, *a–d*, from the North Coast; and the last remnants of Tiahuanaco influence in an emergent local style, that of Ica, are visible in the animal forms and stars of Volume 2, plate 45, *b*, *c*.

Tiahuanaco style textiles, which are known to have been preserved only on the Coast, do not as clearly show such a base strain, though they have sometimes been called Epigonal in the sense of "Tiahuanaco-derived." Rather, they are among the most impressive cloths ever woven in Perú, especially the tapestries; and the designs match very closely those of the stone reliefs at Tiahuanaco itself. (Pl. 44, *b;* fig. 109; also Handbook, vol. 2, pl. 43, *top*.)

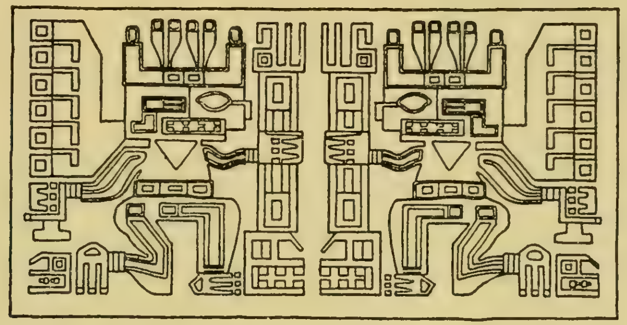

Figure 109.—Tiahuanacoid textile design from Moche. (After O'Neale and Kroeber, 1930, fig. 13; see bibliography, Handbook, vol. 2.)

Around Ayacucho there is found a pottery, the "Chanca" of Tello, showing designs which are a mixture of base Nazca and Tiahuanacoid styles (unless the latter derive rather from some other, as yet unknown, Highland style). This Chanca ware may be a case of Tiahuanacoid elements flowing back into the Sierra after having become established on the Coast.

For ceramics, Bennett (1934) has worked out stratigraphically a sequence of Early, Classic, and Decadent Tiahuanaco time phases (Handbook, vol. 2, figs. 9, 10, 17) at the type site on Lake Titicaca. This sequence is stylistically convincing also, in that the Classic phase (fig. 110, *a*, *b*) has its design elements arranged significantly, and the Decadent (fig. 111) meaninglessly, on the whole. Yet a new problem is posed, since Bennett's Early Tiahuanaco examples (Handbook, vol. 2, fig. 9) are far from expressing formative stages of either representative or geometric ornaments, but look like the broken-down complex end-product of some previous style. The problem of the ultimate beginnings or origin of the Tiahuanaco style accordingly needs further investigation.

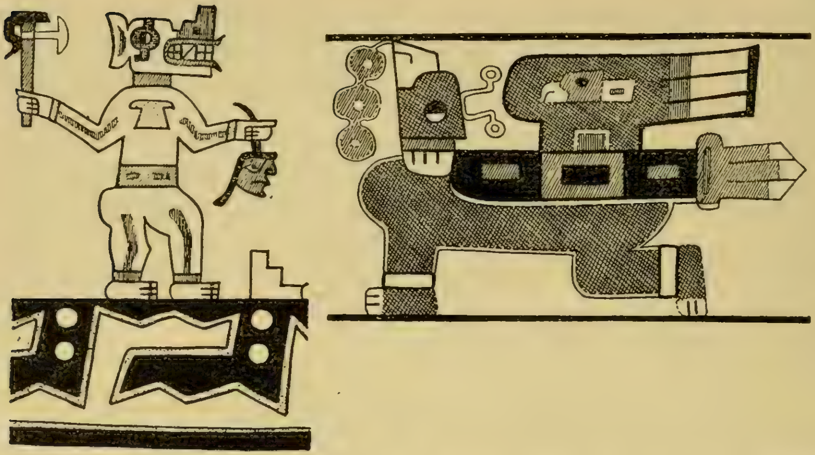

FIGURE 110.—Classic Tiahuanaco pottery designs, from the type site. (After Bennett, 1934, fig. 15.)

The stone sculpture of the Tiahuanaco site is, of course, more resistant to stratigraphic treatment: statues rarely are found in refuse deposits. The forms of the sculpture come closest to the Classic Tiahuanaco phase in pottery painting; but still closer resemblances to the sculpture, especially its relief designs, can occasionally be found on the Coast, as at the unique burial site at Pacheco in the Nazca Valley (pl. 43, *a;* also Handbook, vol. 2, fig. 13, *a*). Some of the ware here is almost ultra-Tiahuanaco in design. Bennett (1934 and

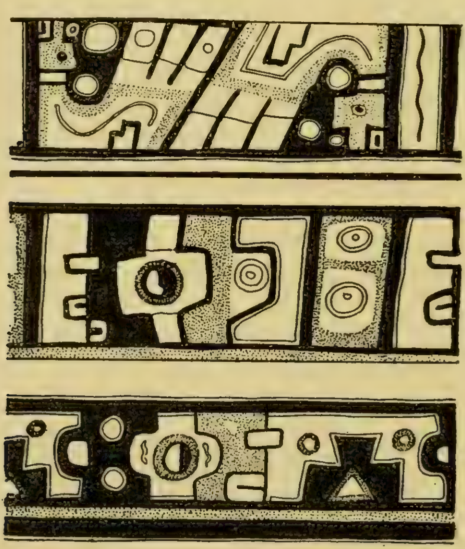

FIGURE 111.—Decadent Tiahuanaco pottery designs, from the type site. (After Bennett, 1934, fig. 17.)

Handbook, vol. 2, p. 111) has classified Tiahuanaco sculpture into style groups, which will probably furnish the foundation for an ultimate sequence in time.

Posnansky's classification (1914) into Tiahuanaco I and II Periods seems to be based chiefly on type of building stone, and to remain speculative as regards development of the style and the total culture. On the other hand, pottery of Bennett's Early and Classic phases seems limited to the vicinity of Tiahuanaco and parts of Lake Titicaca, whereas Decadent, or apparent derivatives or influences from it, occur through much of the Altiplano of Bolivia—thus providing another distribution problem presented by the style. The Chiripa pottery style (Handbook, vol. 2, fig. 11) seems such a related one (p. 452).

The Tiahuanaco culture has been guess-dated at A. D. 600–1000, with the Early or I Phase even set back to 300 by some. But 1000–1200 seems a more reasonable estimate for the flourishing of the whole style.

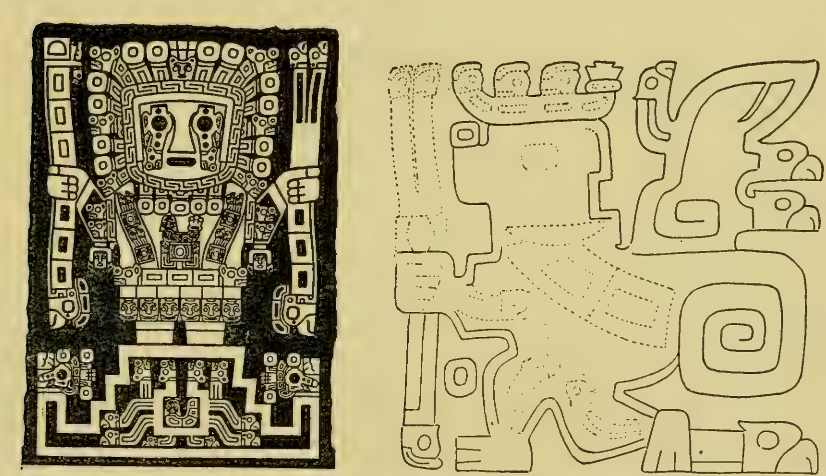

FIGURE 112.—Tiahuanaco stone-carving designs, Tiahuanaco. *Left:* Relief on monolithic doorway (cf. pl. 43, *a*). *Right:* Profile of flying figure, suggestive of textile design, from headband of monumental statue (cf. pl. 41, *b*). (After Posnansky, 1944, fig. 1; and after Bennett, 1934, fig. 21.)

Tiahuanaco sculpture rivals that of Chavín (pl. 41 *a*, *b;* figs. 112–113; Handbook, vol. 2, pls. 35; 36, *bottom;* also vol. 2, fig. 18, from Mocachi). These two are the only South American styles in stone which have achieved thorough control and a degree of grandeur. Tiahuanaco is a severe style, but it avoids the representation of the monstrous and the impression of terror which lurks in Chavín sculpture. With all its condors, cats, serpents, and chimeras composed of these, the Tiahuanaco figures remain decoratively interesting and

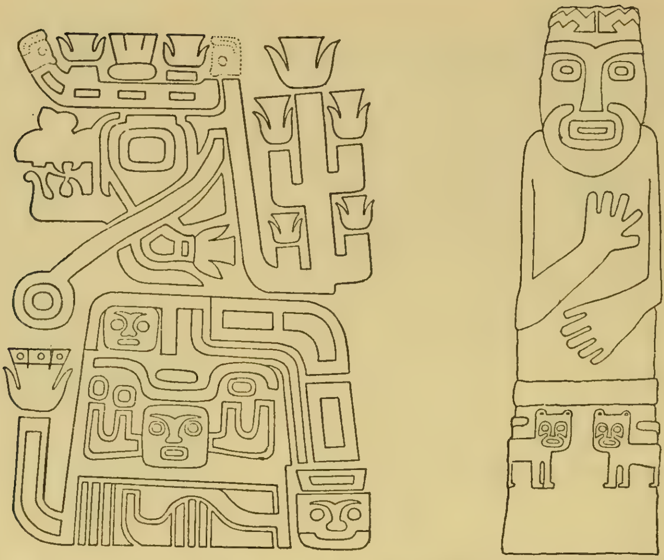

FIGURE 113.—Tiahuanaco stone carving, Tiahuanaco. *Left:* Relief carving on arm of monumental statue. *Right:* Small bearded statue. (After Bennett, 1934, figs. 37, 32.)

are never shocking or repulsive, though they may seem barbaric. Allied to the psychological severity of the art is its stiffness, its fondness for straight lines, for chords rather than arcs. It will round its corners, but the implicit design remains rectilinear—in contrast to the flowing curve which remains basic in Chavín even when its outlines approach the rectangular. This emphasis on the severely straight line in Tiahuanaco may derive from specialities of masonry treatment, such as the strangely elaborate stereometric cut-stone shapes found at Tiahuanaco itself (pl. 41, *c*, *d*). The relief sculpture, as in the famous monolithic gateway, is so angular as to be easily transferable to tapestry; there is even a suggestion of its own possible derivation from woven—not embroidered—textile patterns.

Along with architectural severity of line, Tiahuanaco sculpture has architectonic organization. This is again evident on comparison with Chavín, whose strength is in the form of its detail—the curved lid of an eye, its eccentric pupil, the bend of a fang or claw, the roll of a lip; whereas the total composition may be intricate or bewildering to grasp. The corresponding elements in a Tiahuanaco relief or statue are likely to be insipid in their schematic simplicity. The eye, for instance, is an even square, octagon, or circle; tusks are two opposite-pointing right triangles; a claw is indicated by a square at the end of a rectangular digit or toe. Nevertheless, these vapid geometric units are pulled together by a strong sense of organization into a composition which is almost always impressive and often interesting. Tiahuanaco sculpture remains attached to the quarry block—even more than Chavín, on the whole; but it has made the most of this attachment in developing its peculiar and highly specific stylistic quality.

The material content of the style comprises many insignia. Such are: the square or circular eye, usually with the right and left halves colored contrastingly in painting; a tear line, with or without tear drops, depending from the eye; nose carried up to the brows, often forming a **T** with them; mouth, a long low rectangle; incisor and molar teeth, small rectangles; canine teeth or tusks, a larger rectangle divided by a diagonal (**N**-shape of Lothrop); claws or nails, square, and usually less than five; profile figures, mostly running or flying, with nose and forehead in one line and eye near center of the head; full-face figures standing stiff, elbows bent, with hands either in front of body or spread to both sides and holding staves, scepters, or serpents; radiating headdress of rays with condor, snake, or cat heads at the ends; condor wings attached to profiles of both men and felines; and many others. These iconographic criteria or mannerisms of form are so steadily adherred to as to make not only the Tiahuanaco style itself, but its diluted or derived influences, readily recognizable.

## PUCARA

The Pucara style of the northern Titicaca Basin is less striking, less abundant, and more localized than that of Tiahuanaco, and it became recognized much later. The two are presumably contemporaneous or partly so. This is indicated by a degree of stylistic similarity, coupled with the essential exclusion of each from the adjoining territory of the other. The type site of Pucara lies about half-way between Cuzco and Tiahuanaco. The known range of the style is from there to the northern shores of the great lake.

Pucara is much the less impressive of the two styles, and never attains grandeur. The Pucara block statues (fig. 114, *left;* also Handbook, vol. 2, pl. 38), standing or sometimes seated, generically resemble those of Tiahuanaco, but are executed with much less skill and care, and usually lack many of the Tiahuanaco diagnostic criteria, such as tear line, treatment of teeth, and accouterments, though some of these details do appear in Pucara pottery. Stelae or slabs are carved in relief most often with representations of fish or reptiles, occasionally of men, and sometimes geometrically (pl. 41, *e*, *f;* fig. 114, *right;* also Handbook, vol. 2, pl. 38). The stelae with predominantly geometric pattern (pl. 41 *e*, *f;* fig. 114, *right*) are the best, esthetically. The human figures look like rather poor or degenerate Tiahuanaco; the

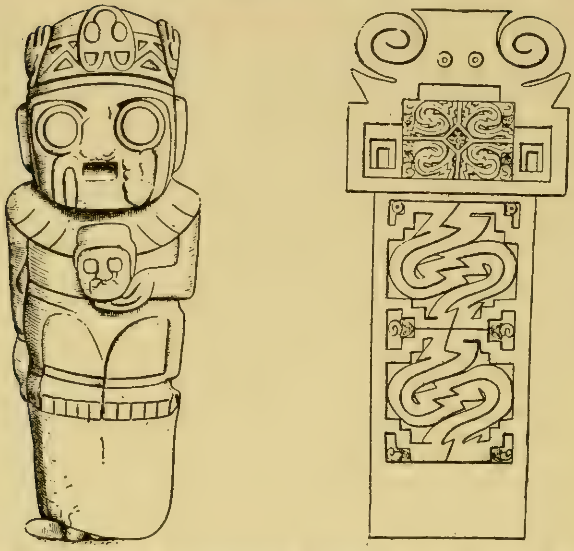

Figure 114.—Pucara stone monuments, Pucara, Puno. *Left:* Statue. *Right:* Stela. (After Tello, 1929, figs. 104, 105.)

fish figures begin to be interesting; the abstractly decorative stelae are skillfully imaginative to the point of sometimes suggesting Chongoyape or other Chavinoid relations, though this similarity is probably only secondary and convergent.

Pucara pottery is known from abundant fragments but few whole vessels. The decorated ware carries modeling, incising, and painting (pl. 43, *b;* Handbook, vol. 2, pl. 37). In fact, the combination of these three treatments is more characteristic of Pucara than of any other Peruvian style, Paracas-Cavernas perhaps coming second. Burnishing is also carried to a high point. There are positive though not close Tiahuanaco affinities in shape, modeling, themes, and details of treatment of eyes, tears, ears, teeth, profile, etc. There is perhaps even more preoccupation with feline motifs than in Tiahuanaco. The pigment range seems narrower, in contrast with the long-noted approximation of Tiahuanaco to Nazca in color variety. Pucara is a well-characterized, well-controlled ceramic, original in style, in no sense directly dependent on or imitative of its southern sister, though obviously of generic Tiahuanacoid family.

It is not clear how the Pucara style managed to come so close to equaling the Tiahuanaco one, and yet seems to have had no influence beyond its provincial homeland.

### RECUAY, CALLEJÓN, AND AIJA

The Recuay style is the most specially developed in the Callejón de Huaylas, the one long inter-Andine valley of north Central Perú.

The Recuay manner is most characteristically expressed in high-grade pottery: negatively painted ware with linear designs of highly stylized felines, in rampant or sitting position, angular, open-mouthed, long-tailed with serpentlike head appendages, almost resembling dragons (pl. 42, *b;* fig. 119, *left;* also Handbook, vol. 2, pl. 34, *a–c*). Sometimes conventionalization is carried to the point of having a head at each end. These outline figures come in panels; the vessels are frequently modeled, especially carrying spouts, stirrups, bridges, and figures of men and animals. These modeled figures are smaller, clumsier, and stiffer than Mochica ones, but tend more often to appear in groups illustrating genre scenes. There may be a historic connection between Recuay and Mochica: the Santa River of the Callejón reaches the sea at the south end of Mochica territory. Peculiarities of Recuay ceramics are wide disklike lips and short side spouts. It is a highly distinctive ware. Negative painting has lately been discovered in several parts of Perú, apparently mostly in early horizons; but elsewhere it is extremely simple in design. Only Recuay has advanced to elaborate figures, and reinforced these by adding touches of positive red. It may be suspected that the linearity or avoidance of mass and area in Recuay painting is the product of some feature of the technical process of negativizing. Linearity means that heads and bodies tend to be represented by lines, not merely that areas are bordered by lines.

The period of Recuay has long been in doubt. The data of Bennett (1944) seem to make it pre-Tiahuanaco, though an occasional piece suggests that Recuay may have continued into a bit of overlap. The stylistic development and relations are not clear. There are no specific stylistic traits of Chavín in Recuay, in spite of the close proximity of the two-type sites: though they lie in different oceanic drainages, they are only 30 airline kilometers apart. Chavinoid resemblances pointed out by Tello in Recuay are admittedly thematic, not stylistic. The figure modeling gives a tie-up with Mochica, but priority and direction of influence, or possible joint derivation, are uncertain.

In the modeling group there also belong two little-known Coastal wares. One of these is Negative, or Gallinazo. The finer vessels of this are fairly Recuay-like in modeling; the cruder ones (Handbook, vol. 2, pl. 33) scarcely manifest a striking resemblance except in the fact of negative painting. The general effect is rather that of poor pottery of the Coast. Larco Hoyle (1948) believes Negative ("Virú") to be pre-Mochica. The second ware, Abigarrado or Cursive Modeled, shows both small-figure genre modeling and painting in cursive lines. A reported association with Chanchan has given this ware the repute of a connection with formative Chimu. Larco (1948) renames the style Lambayeque, from its focus of frequency and presumable origin, and puts it in terminal Coast Tiahuanacoid ("Huari") time, which is in fact immediate pre-Chimu. Neither of these two styles carries any element of the highly ornamental and characteristic painted cat designs of Recuay: these remain the special peculiarity of Recuay.

Metal seems not to have been abundant in the Callejón, and textiles have not been preserved. There is some sculpture, chiefly from the Huaraz-Carhuaz stretch in the Callejón, and from Aija in Huarmey headwaters just outside but nearby. This sculpture consists chiefly of stone lintels and of statues. The lintels (figs. 116, 117) bear relief carving of a squatting or spread-leg human figure flanked by profile felines whose conspicuously eared faces may be turned front. The position of the central figure is slightly reminiscent of reliefs in Ecuadorian Manabín (cf. fig. 123); cats as such are too common a theme in Perú to prove anything as to relations; and the style of these lintels is not very characteristic.

The Callejón-Aija statues are little more than blocks, slightly shaped from a boulder (fig. 115; also Handbook, vol. 2, pl. 34, *e–g;* and, for a cat-head, see pl. 34, *a*). The chief cut into the stone is between head and trunk. The head constitutes about two-fifths of the total length, the nose is long, the eye without expression, the mouth thin and rudimentary; the execution is without either skill of line or feeling for planes. It is a pretty inept sculpture compared with Chavín or Tiahuanaco, or with Mochica modeling; and its stylistic meagerness also makes it difficult to relate or place in time. Certain accessories in the surface relief suggest a connection, though not a certain one, with the Recuay pottery; compare the relief panel in figure 115 with the feline in figure 119.

## UPPER MARAÑÓN DRAINAGE

The highland north of Chavín and the Callejón is little known, archeologically. Huamachuco has impressive ruins, but little distinctive ceramics or metal. It has yielded some sculpture, especially lifelike, full-round, head-banded human heads on tenons, presumably for wall insertion; also tenoned, squarish, serpent-horned cat heads; and neatly executed step-fret and other geometric relief, as shown in McCown (1945). Similar pieces from Santiago de Chuco, not far away, published by Horkheimer (1944) are shown in outline in figure 118. The handling of the stone in this carving is skillful and definite. The human heads apparently come nearer to successful plastic depiction of actual human heads than can be found in any other South American stone sculpture. Chavín is too interested in the monstrous, Tiahuanaco in the schematic, San Agustín in both, to be realistic. The antecedents and relations of this local art promise, therefore, to be interesting when they can be discovered. On account of the success-

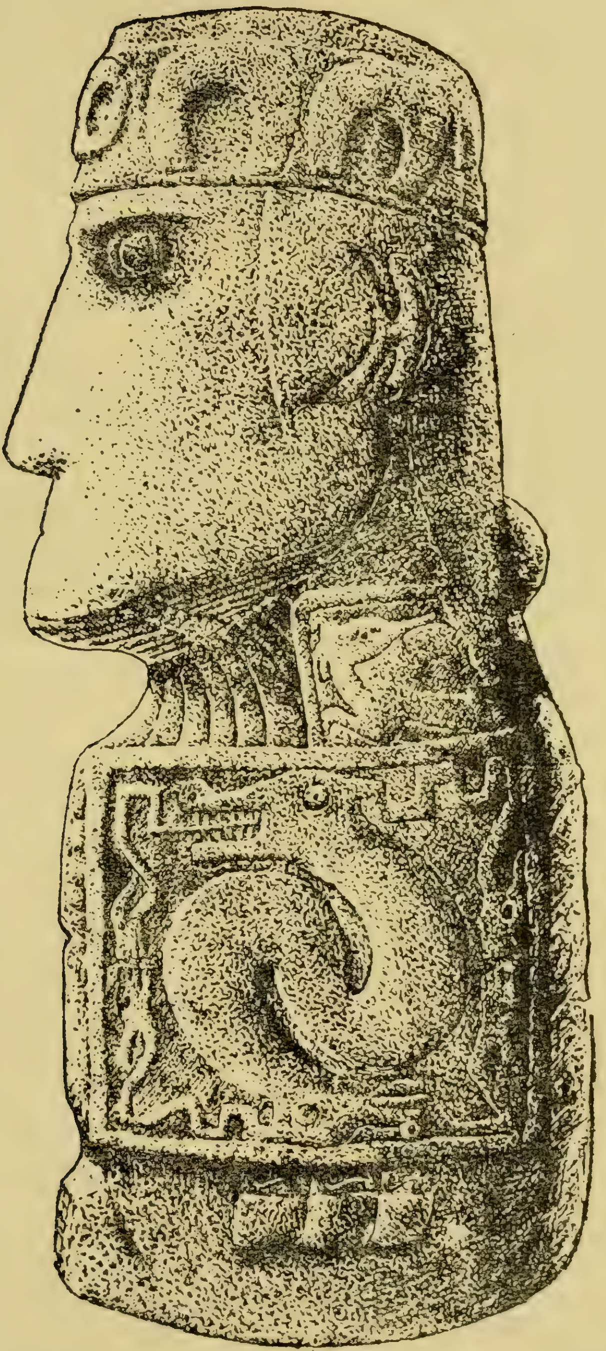

Figure 115.—Stone statue at Aija, head of Huarmey River. (After Tello, 1929, fig. 43.)

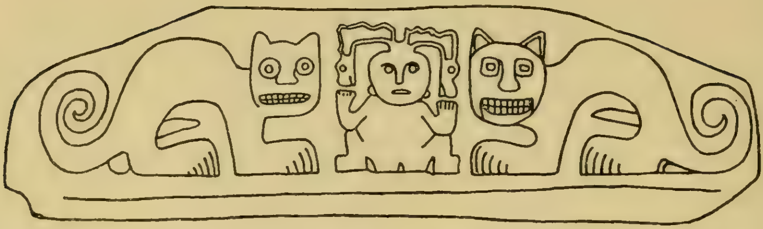

FIGURE 116.—Carved lintel near Aija. (Redrawn from Tello, 1923, fig. 33.)

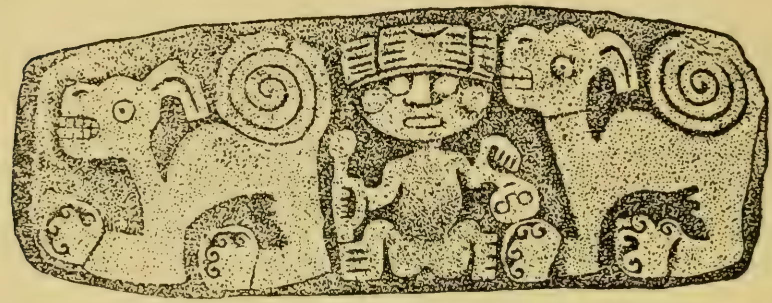

FIGURE 117.—Carved lintel, Callejón de Huaylas. (After Bennett, 1944, fig. 33.)

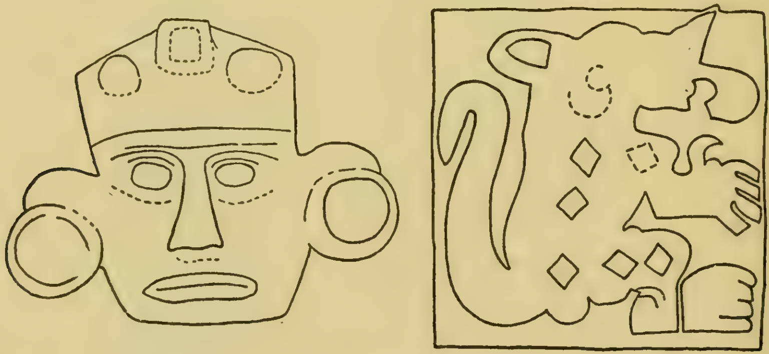

FIGURE 118.—Stone sculpture from Santiago de Chuco, near Huamachuco. *Left,* Human head, full round. *Right:* Feline relief. (Redrawn from Horkheimer, 1944, figs. 30, 36.)

fully representative quality, an influence of Mochica pottery sculpture is possible, though wholly unproved.

First recognized on the North Coast as Cursive Tripod ceramics, the Cajamarca style seems to center in the Highlands at the historic city of that name. Tello makes the style part of a larger group which he names Marañón, but which remains wholly undescribed. The characteristic tripod vessels—otherwise definitely sporadic in Perú—may point to Ecuadorian connections. The rapid running lines of the design suggest the Recuoid styles just discussed. The vessel forms, leg-shapes, colors, pattern-disposition, and designs are distinctive of Cajamarca (pl. 43, *e;* also Handbook, vol. 2, fig. 16). There is a suggestion of over-all resemblance to Costa Rican and Nicaraguan wares; but no specific identities of detail have yet been discovered. Other than for its pottery, the culture remains unknown. Larco Hoyle (1948) makes Cajamarca just pre-Chimu and overlapping with Chimu.

## INCA

The *Inca* style of Cuzco is the latest of the Highland styles, and exemplars of it occur from Ecuador into Chile and Argentina. Within this enormous range, the frequency of Cuzco type objects varies locally; probably in proportion to the number of resident *Inca* officials, garrisons, or colonists. Most of this spread is now believed to have occurred within the century preceding the Spanish Conquest; until then, the *Inca* controlled only the environs of Cuzco. In and about this valley, *Inca*-type remains are overwhelmingly dominant. It was not until 1941 that any non-*Inca* culture (Chanapata) was discovered. This is pre-*Inca*, but by an unknown interval. Nor has anything like a developmental or half-formed *Inca* been found. Suggestions of derivation of the *Inca* style from the Tropical Forest to the east, or from Chincha on the Coast, are as yet unsupported speculations. Although thus unexplained as to its origins and affiliations, the *Inca* style is well developed and highly characterized in a number of media. It emphasizes technological control, possesses a set of firm patterns, and mostly shrinks from representation.

The Cuzco people found satisfaction in fine working of stone, from gigantic masonry blocks (Sacsahuaman) and bedrock cuttings (intihuatana) to handleable implements and vessels. All these show a feeling for mass, for planes, for exact fit if they are joined, for surface texture, and for functional form, and are executed lovingly. Stone vessels may be round (Handbook, vol. 2, pl. 58, *g*), but are often quadrilateral (same, pl. 79, *c*). If they have knob handles, the presence of these has probably doubled the labor of manufacture. There seems to be no sculptured statuary.

Plastically, the best *Inca* work consists of miniature figures, mostly of llamas, pumas, or human beings, carved of fine-grained stone or cast in bronze, silver, or gold (Handbook, vol. 2, pl. 58, *d*, *e*, *f*). These figures are very simple, not too realistic in proportions, but extremely expressive of tactile effect in their curving planes.

*Inca* pottery is marked by chaste classic form and sobriety of design and color. Typical shapes are the long-necked, flaring-mouthed, cone-bottomed "aryballos" (pl. 43, *c*—far from identical with its Greek namesake); the cylindrical goblet; the shallow plate with hoof or bird-head handle. The number of shapes is limited; so is the range of patterns, which are regularly executed within a channel of good taste but without either strong interest or slovenliness. Representation is chiefly of small animals, like flies, or of highly conventionalized birds. Colors tend to the somber; if they are bright, it is without vivid hues. (See also Handbook, vol. 2, pl. 77.) The whole effect is one of intended and achieved control. It is this quality that the *Inca* ceramics share with the stonework, rather than that there has been an outright transfer to plastic clay of qualities of form induced by the use of resistant stone as a material—a condition which contrasts with the supposed transfer from Chavín lithic to Cupisnique ceramic art.

*Inca* textiles favor all-over designs, with the surface broken into many small panels containing diverse designs usually repeated diagonally (pl. 44, *d;* Handbook, vol. 2, pl. 80, *top*). The aim is to fill the frame of the cloth pleasingly, evenly, and with variety, not to organize it.

Large wooden drinking goblets called queros were carved and inlaid with designs in resin or gum-imbedded pigments. Often these designs represent scenes. These may have story interest like *Aztec* paintings or Guamán Poma's drawings, but they also evince a similar, peasant-art-like crudity of forms. The majority of preserved queros are certainly Colonial or recent; but the style seems to go back to pre-Conquest *Inca* times (Handbook, vol. 2, pl. 80, *bottom*).

All in all, Cuzco-*Inca* art is well directed, steadily controlled, unexuberant, rather deficient in ambitious composition and in objectives other than technological ones. It keeps a consistent level without falling into weaknesses, but has none of the smouldering drive of Chavín, the imaginative skill of Mochica, the primitive taste of Nazca, or the compositional ability of Tiahuanaco.

## LATE PERUVIAN COAST STYLES

In the post-Tiahuanaco Period of the last two or perhaps three centuries before the Spanish Conquest, a considerable degree of assimilation of culture occurred along the Peruvian Coast, even anterior to the *Inca* Conquest. Metal had become fairly abundant and metallurgical processes were skillful and uniform (Handbook, vol. 2, pl. 50). The designs were stiff even when representative (fig. 121, *right*). Similar "arabesques" of more or less geometrically patterned adobes (Handbook, vol. 2, pl. 52, *bottom*), or cut into sun-dried stucco (figs. 120; 121, *left*), decorated the walls of public, royal, or sacred buildings. Textile decoration everywhere tended to geometric regularity (pl. 44, *c*), and especially to borders and corner fillings of small repetitive elements—geometric cats, birds, or fish (Handbook, vol. 2, pl. 46). The over-all, large, human-figure designs of Tiahuanaco were on the way out, the over-all panelling of *Inca* not yet well developed. Wood carving was neat, angular, repetitive (Handbook, vol. 2, pl. 56, *a*, *b*, *e*, *f*) and without much feeling for plane surfaces—certainly not for curved ones.

Against the relative uniformity of this generalized Late Coast technology, several local variations in ceramic styles stand out: Chimu, Chancay, Chincha, Ica. The first, a modernization of Mochica persistences and Tiahuanacoid importations, has already been discussed (p. 432). Chancay is a characteristic black-and-white ware, technically poor in paste, slip, and color application, hastily made with a minor element of embellishing modeling which tends to be either crude or florid; but with an interesting and original feeling for geometric design disposition in panels, including balanced asymmetry—unlike right and left halves (pl. 43, *h*). Chincha and Ica are closely related, in fact are little more than two facies of one style. Of the two, Ica is the more decisive and farther developed. Its shapes are partly imitated from metal vessels; the painting is obviously stimulated by textile patterns (pl. 43, *g*). Black ware showing (like Chimu) some influence of metal prototypes, or at least a striving after metalloid effects, is more strongly represented in Chincha. The earlier phase of Ica ware (Handbook, vol. 2, pls. 44, *c;* 45, *c*) occasionally still shows Tiahuanacoid animal designs and runs to four colors. The later phase is more rigidly geometric, limits itself to three colors, and is sometimes associated or hybridized with *Inca* shapes and patterns (Handbook, vol. 2, pl. 44, *d–g*).

Definite retractile tendencies of Late Coast art are evidenced in the pottery painting: Chimu, normally monochrome; Chancay, two colors; Chincha-Ica, originally four, later reducing to three, with an accompanying all-black strain; red-white-black geometric (Coast Tiahuanacoid C), three; *Inca*, not over four colors; painted representation, almost vanished from all these regional styles. These ceramic manifestations typify the condition of all Peruvian art, especially on the Coast, in the last pre-Conquest Period. This late art possessed diversity, facility, reasonable skill, occasional taste, but only mild interests and no feeling. In the Highlands, *Inca* art retained a measure of severity, and therewith a certain self-respect; but it evinced little more emotion. The drives were gone which in earlier periods had led to the originality and creativeness of Chavín, Mochica, Nazca, and Tiahuanaco.

## VARIOUS PERUVIAN CERAMIC STYLES

Identifying mention should be made of a series of Bolivian-Peruvian styles which are imperfectly known, or unplaced in their relations, or perhaps were phases of a larger style, or in some cases reduce to synonyms.

From Arequipa south into Chile there occurs a heavy, red-white-and-black ware, which in Perú is being given the site name **Churajón** (fig. 119, *right*) in place of Uhle's "*Atacameño*" and "Chincha-Atacameño," whose separation from each other and affiliation with Chincha are both doubtful. (See p. 454.) Equally uncertain is the derivation of the Churajon style from Tiahuanaco.

**Chuquibamba,** a little-known, unpretentious style from the middle Majes River.

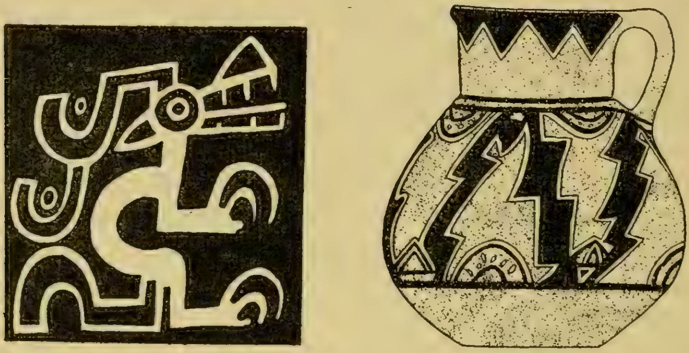

FIGURE 119.—Recuay and Charajon pottery. *Left:* Negative design on Recuay jar. *Right:* Jug from Arequipa. (After Tello, 1923, fig. 11; and Kroeber, 1944, fig. 2.)

**Chiripa,** a meagerly documented culture and ceramic style (Handbook, vol. 2, fig. 11) found at that site, a few miles from Tiahuanaco, stratigraphically placeable before Decadent Tiahuanaco, according to Bennett (1936).

**Chanapata,** the only pre-*Inca* ware of Cuzco yet discovered (Rowe, 1944), without visible relation to *Inca*, Pucara, or Tiahuanaco.

**Apurimac,** a style suggested by Kroeber (1944) on the basis of a few striking or unique pieces (pl. 43, *d*) attributed to Apurimac drainage in the Highlands.

**Chanca,** Tello's name for Ayacucho ware, showing both base Nazca and slovenly Tiahuanacoid influence.

**Kollawa,** Tello's designation for the superbly modeled and in part ultra-Tiahuanaco ware of Pacheco, Nazca (pl. 43, *a*).

**Middle Cañete,** distinctive and fair-quality pottery of a pre-Tiahuanaco culture (Handbook, vol. 2, fig. 12), showing some Nazca B-Y influences.

**Interlocking,** named from its designs, an early central Coast style occurring from Chancay to Pachacamac, and showing probable terminal Nazca influences (Handbook, vol. 2, pls. 26, *f*, *g;* 27, *a*, *f*).

**White-on-Red,** inferred by Uhle to follow Interlocking at Chancay, shown by stratigraphy to precede it; an esthetically poor pottery (Handbook, vol. 2, pls. 26, *a–d;* 27, *b*, *d*, *e*, *g*). Salinar in Chicama Valley (Larco Hoyle, 1944 a; Kroeber, 1944), a hypothetical ancestor of Mochica, is also white-on-red, so far as painted. In the Callejón de Huaylas, Bennett (1944) recognizes a White-on-Red style, temporally between Chavín and Recuay. Mochica is of course de facto a white and red style.

**Nievería and Aramburú,** named respectively after a cemetery and a group of huge huacas in Lima Valley, are related and overlap (Handbook, vol. 2, pls. 28, *d–g;* 29). These are two composite styles, containing an unidentified Highland ingredient, a decadent Nazca one, and probably an Interlocking element; and they are pre-Tiahuanacoid. Occasional beautiful vessels occur. They are also known as Early Lima.

**Early Ancón and Early Supe:** Chavinoid at those sites (fig. 99, *right*).

**Middle and Late Ancón, Pachacamac,** etc., with subdivisions: successive stages of development of generally mediocre pottery in and about Lima Valley, from the period of clearly defined Tiahuanaco influences until the Spanish Conquest. Roughly, Middle Ancón I corresponds to specific Tiahuanaco; II, to "Epigonal;" Late Ancón I, to Red-White-Black geometric; II, to Chancay" ("Sub-Chancay" or base Chancay).

**Epigonal,** poor-quality Coast Tiahuanacoid, sometimes but not necessarily decadent in time also (Handbook, vol. 2, pl. 40, Coast Tiahuanaco B).

**Red-White-Black Geometric.** More or less equatable with Coast Tiahuanacoid C—perhaps a local Coast development out of Tiahuanocoid rather than still a phase of it. Characterized by step designs with the angles filled with small hollow squares containing a dot, bar, a pair of bars (Handbook, vol. 2, pl. 40, *h*). Larco Hoyle (1948) calls its North Coast form Huari-Lambayeque (Handbook, vol. 2, pl. 41, *c*).

**Wilkawain Tiahuanacoid,** distinguished by Bennett (1944; also Handbook, vol. 2, fig. 15), in deep stone-lined tombs in the Callejón. It seems derived from Coastal Tiahuanacoid rather than from the type culture in the Highlands on Lake Titicaca.

**Negative, or Gallinazo** (Handbook, vol. 2, pl. 33), and **Abigarrado,** or **Cursive Modeled,** two strains of ware with small figure modeling and thin-line cursive painting, both not too securely placed as to time, but the former seemingly earlier, are known from the North Coast, but have affiliations with Recuay-Callejón, under which they have been discussed (p. 445).

## ANDEAN CHILE AND ARGENTINA

**Atacama.**—South of the range of the Tiahuanaco and Nazca styles, art rapidly falls off in quality. From Arequipa south through the Atacaman region, there prevails a basic type of ceramics of mediocre decorative value, in minor variations of local and periodic phase. This ware was misnamed Atacaman and Chincha-Atacaman by Uhle, on the basis of a supposed Tiahuanacoid stimulus and subsequent Chincha-Inca influence or ingredient. Except for Uhle's authority, a Chincha-Ica element would perhaps hardly have been suspected in the Arequipa-Atacama area. Tiahuanaco and then *Inca* influences undoubtedly reached the region: there exist sufficient examples of what are either imported trade pieces or more probably local imitations. But that Tiahuanaco gave rise to an Atacaman style, which thereupon was modified through Chincha conquest—just as the Chincha are supposed also to have had a hand in the formation of the Cuzco *Inca* style—are Uhlean speculations for which it is hard to understand either the motivation or the evidence. Stylistically, Arequipa-Atacama ware might possibly be locally derived out of Tiahuanaco or out of some more generalized South-Highland style from which Tiahuanaco itself also sprang. In any event, there is little difference between the so-called Atacaman and Chincha-Atacaman in ware, shape, or design. (See fig. 119, *right;* also Handbook, vol. 2, pl. 129, *a.*) There is also pyrography on gourds (Handbook, vol. 2, pl. 130, *d*); and carving of wooden snuff tubes and tablets or palettes (Handbook,

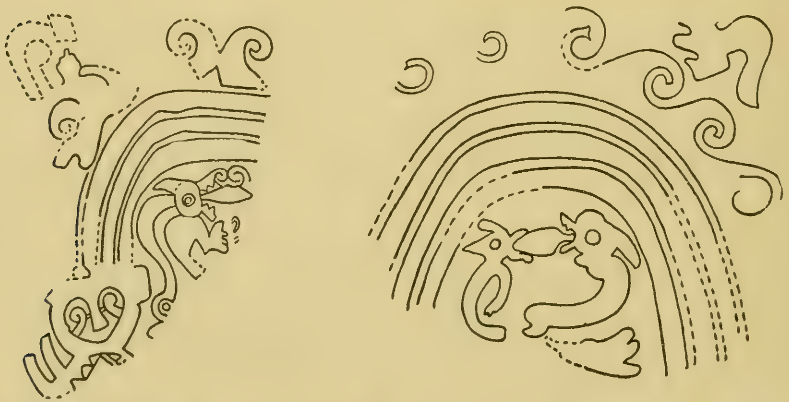

FIGURE 120.—North Coast wall reliefs. Decorations from Chanchan. (Redrawn from Horkheimer, 1944, figs. 61, 62.)

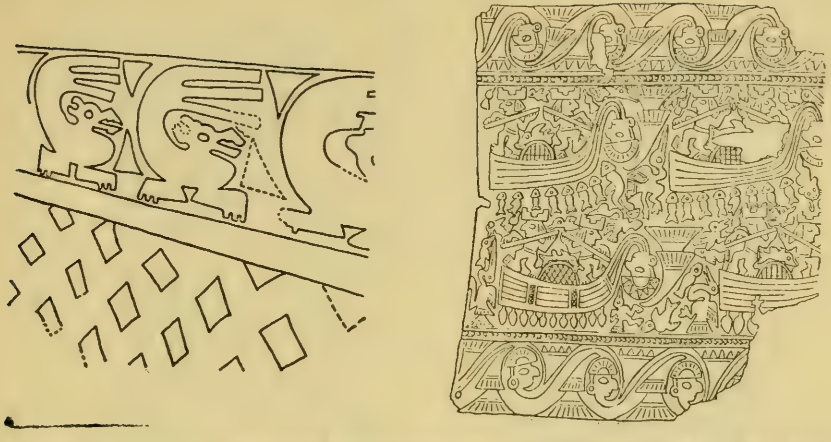

FIGURE 121.—North Coast relief and goldwork. *Left:* Chanchan wall decoration. *Right:* Boat scene in gold. (*Left,* redrawn from Horkheimer, 1944, fig. 64; *right,* after Antze, 1930, fig. 1.)

vol. 2, pl. 132, *e*, *g*, *i*, *j*, *l*). This small-scale carving, known chiefly from Chile, appears to have Tiahuanaco style resemblance.

**Diaguita.**—Over the watershed in the Northwest Argentine *Diaguita* or *Calchaquí* region there was *Inca* import or influence, and Chinchaizing has again been alleged; but there is a native style of ceramic painting and incising in two local variants: the northern *Diaguita* or Santa María (fig. 122, *upper*, *left*), tending toward curves; and the southern, more rectilinear, or "Draconian" (dragonlike) manner (fig. 122, *right*). The two manners have been considered contemporaneous. A third or "Belén" style is recognized for children's funerary urns (fig. 122, *lower*, *left*) in the southern part of the Santa María range; it seems also to be a local or functional variant. Theories as to derivation of Draconian from Tiahuanaco or even from Nazca seem to be mere speculations. Qualitatively, the group of Northwest Argentinian styles rate modestly, at about what would be expectable of arts marginal to the great arts of Perú. (See also Handbook, vol. 2, pls. 139–143.)

A recent review and interpretation by Bennett, Bleiler, and Sommer (1948) approaches the Northwest Argentinian situation afresh. Four ancient culture provinces are recognized. Of these, "the North" consists essentially of the modern province of Jujuy, and is not *Diaguita* but Humahuaca in the terminology of the Handbook (vol. 2, p. 619). The Center comprises Salta and Tucumán provinces; the South, Catamarca, La Rioja, and San Juan; the East, Santiago and Estero. *Inca* influence is visible in all four regions; and attributions of three pre-*Inca* periods are attempted for a series of local ceramic styles or wares. Of these styles, the following come nearest to mani-

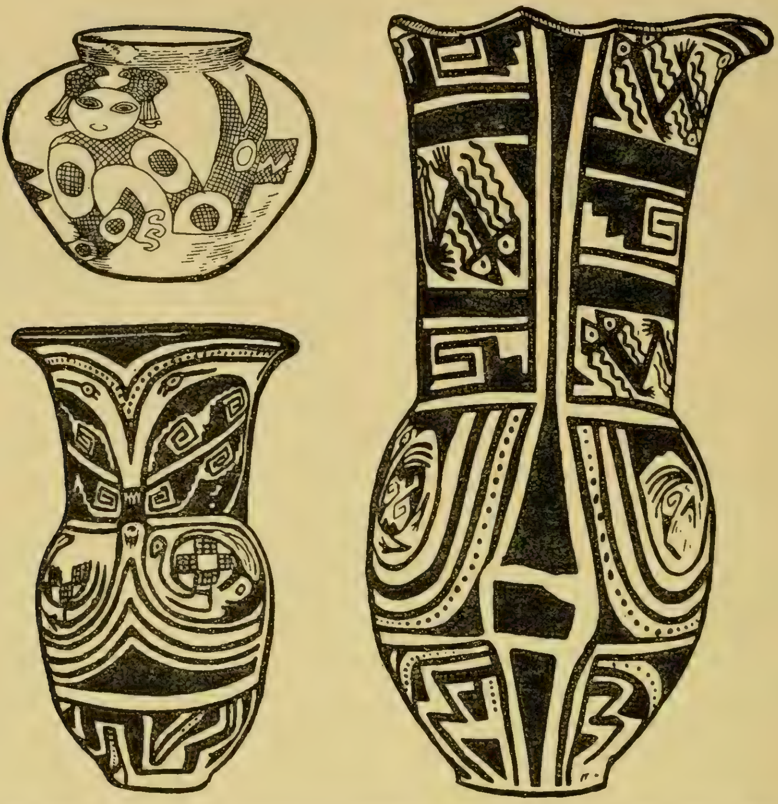

Figure 122.—*Diaguita* pottery, Northwest Argentina. *Upper, left:* Santa María style, incised. *Right:* Draconian style. *Lower, left:* Belén style, children's mortuary ware, Yocavil Valley. (*Upper, left,* after Boman and Greslebin, 1923, fig. 24; *right,* after Outes, 1907, fig. 30; *lower, left,* after Boman, 1908, pl. 4, *c*.)

festing some degree of esthetic significance: In the North, "Isla" and "Alfarcito" wares, interpreted as Middle Period, and "Tilcara" as *Inca* (they are undifferentiated as "Humahuaca" by Casanova in the Handbook (vol. 2, p. 625)) contain definite stylistic reminiscences of Atacama and Arequipa-Churajón wares. In the Center (corresponding to the northern part of the *Diaquita* area proper), Santa María painted wares, probably of Middle Period, are conspicuous, while another polychrome style, "La Paya," is thought to continue into Late. In the South, "*Huiliche* Incised" and "*Cienegas* Polychrome" wares represent the Draconian style of Argentinian authors, and are both reckoned as Early. This would give them priority over all other well-decorated wares of ancient Argentina. They are thought to have been followed locally by the "Coudorhuasi" and the Belén urn styles. In the "East" (called Chaco-Santiagueño in the Handbook, vol. 2, p.

655) the outstanding ceramic styles have been named or renamed Llajta Manca A, Marias, and Represas, and may have developed in that order during Middle and Late times. These eastern or Santiagueño styles are less ambitious that those of the *Diaguita* area proper, but better channeled, controled, and executed. If the foregoing interpretation is even partly sound, it is evident that the stylistic history of Argentinian ceramic art is complex and that it has been marked by more minor originalities than its moderate level of execution would lead one to expect.

## ECUADOR

Ancient Ecuadorean art shows surprisingly few specific relations with Peruvian. There is a rather sporadic overlay of definite *Inca* or *Inca*-influenced pieces, quite likely the product of the final native century; and occasional instances of particular resemblances to this or that feature from earlier Peruvian times. But all in all there is little that the analyst interested in relations can lay his hand on. Even Tiahuanaco influence, usually so easily discernible in Perú, remains rather dubious in Ecuador, though it has been alleged. The cause of this prevalent separateness of Ecuador seems to be that the early high cultures of Perú did not succeed in penetrating effectively into the far north of Perú. This holds even for the Chavín and Mochica cultures which were themselves localized in middle North Perú. Far North Perú long remained backward culturally and esthetically, and appears to have participated in the general Peruvian sphere only during the last few pre-Conquest centuries, and then passively rather than creatively. With northernmost Perú thus retarded, Ecuador was likely to be even less influenced.

On the other side of Ecuador, Colombia produced no outstanding achievements in art, except in a few localized developments of presumably brief duration or specialized technique, such as San Agustín. There was, therefore, no specific stimulus or influence of importance to flow into Ecuador from the north, either; and over the Andes to the east lay the Tropical Forest with its shifting, primitive tribes. The only chance for an outstanding art to develop in Ecuador was accordingly through an internal growth; and this did not happen to occur. Ecuador cannot fairly be rated a sump in the history of art, but it produced no peaks.

As in Colombia, construction in stone was insignificant, and masonry of dressed stone seems not to occur. The climate probably prevented much use of adobe and of the simple but massive effects attainable with it. Sculpture in stone was regionally sporadic. The pottery, as in Colombia, is on the whole definitely inferior to that of both Central America and Perú. Woodwork and textiles have perished, but there appears to be little indication that they were specifically significant esthetically. Metallurgy, especially in gold, was probably the most advanced art, as part of an interconnected development which stretched from southern Central America to North Perú.

The available data show real differences within Ecuador, but it does not seem that a history of centers and radiations can yet be worked out, such as has been partially determined for Perú.

The fullest descriptive presentation of Ecuadorean antiquities is in Saville's monumental two volumes (1907–10) on the antiquities of Manabí, the semiarid province on the central Coast, so that it is profitable to begin with that region.

Manabí sculpture, except for a few quite rude pieces in the round, is represented chiefly by bas-reliefs and chairs. Reliefs are either geometric-symbolic, or show a characteristic frontal figure with headdress, turned feet or squatting posture, and sometimes flanking birds or animals (fig. 123, *a*, *b*, *c*). In style these are rather naive. Some semigeometric reliefs of lizard or insectlike figures (fig. 123, *d*, *e*) are not much superior; they show a superficial likeness to Pucara stelae from the northern Titicaca Basin (p. 443). A few feline heads (Saville, 1907–10, vol. 2, pls. 46, 47, 99) evince some unrealized esthetic potentialities, and also possible indications of Peruvian influence, although the treatment of the tusks wavers between the Chavín and the Tiahuanaco manner.

The massive and impressive chairs (pl. 46, *a;* also Saville, 1907–10, vol. 1, pls. 4–27; vol. 2, pls. 32–41) have no back; the seat and arms are executed in a single graceful sweep; and a crouching figure, usually human, serves as pedestal.

Manabí pottery is infrequently incised, still more rarely painted, sometimes rudely modeled. Typical forms are the tripod bowl, and the high-pedestaled "compotera" or fruit-dish shape, common also elsewhere in Ecuador. Separately modeled figures or heads are the most interesting; a superconvex nose is characteristic; some are effective as grotesques, but may not have been so intended (fig. 124, *a*, *b*).

North of Manabí in Esmeraldas province, still along the coast, d'Harcourt (1942 (1947)) has recently illustrated a pottery art, culminating in modeled and molded figurines and heads, closely related to those of Manabí. There are grotesques, but more naturalistic pieces. The heads are far from standardized. In fact they evince great variety of feature and expression. The bodies come in many postures and gestures: pointing, saluting, nursing, playing panpipes, sitting leaning forward, arm across knees, elbow on knees, chin in hand, etc. Occasional mutilated faces and erotic couples suggest Mochica preoccupations. These Esmeraldas figurines are not too well finished, are usually unpainted, and are careless in proportions. But they are

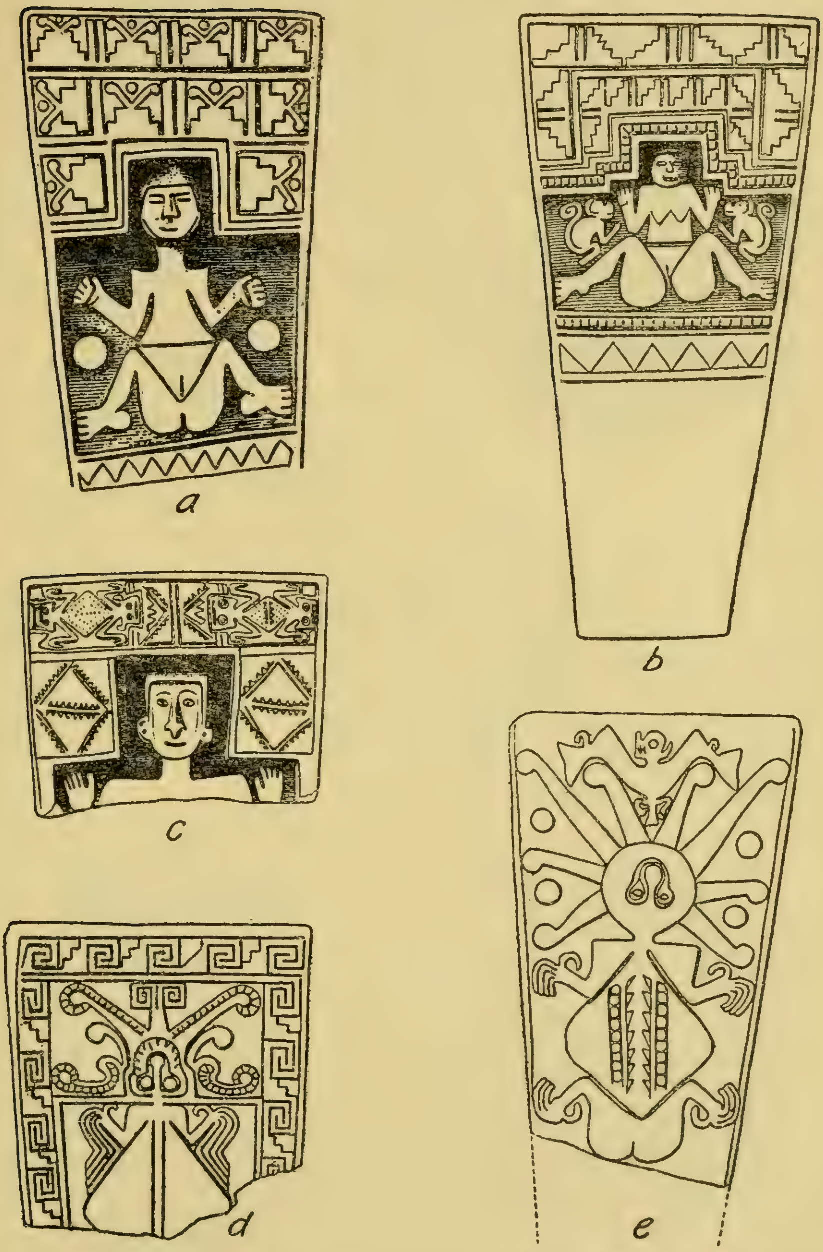

FIGURE 123.—Manabí, Ecuador; relief sculpture. *a–c*, Men; *d*, *e*, "lizards." (After Saville, 1907–10, pls. 4, 5, 6.)

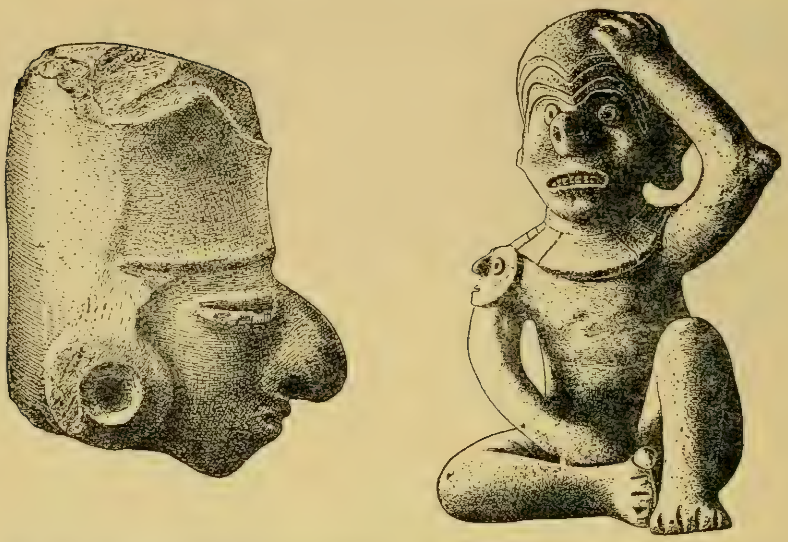

Figure 124.—Grotesque pottery head and figurine, Manabí, Ecuador. (After Saville, 1907–10, pls. 91, fig. 6; 94, fig. 8.)

executed with verve, dash, seizure of characteristic form and attitude, and a quality that appeals to us as playful. There is no trace of symbolic or ritual significance in the style. It is a secular art, whose lively naturalism contained potentialities of achievement that might have been realized if technological competence and standards of workmanship had kept pace with the esthetic interests.

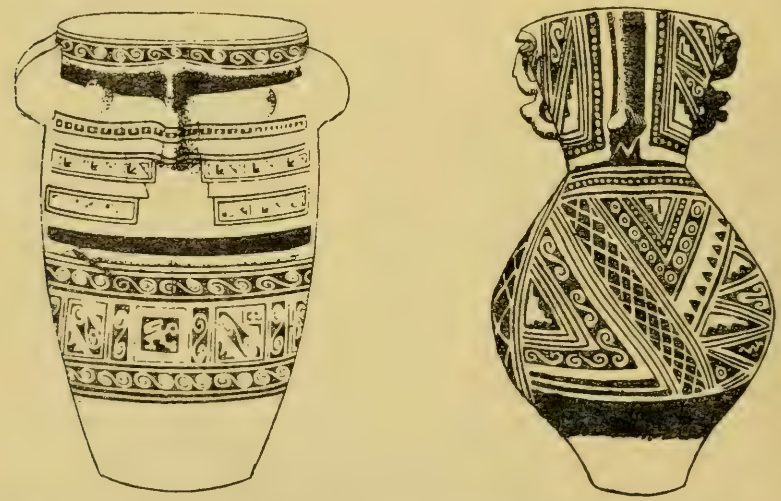

Figure 125.—Pottery jars, Ecuador. *Left*, San Sebastian culture, Pallatanga; *right*, Elen-pata culture, Guano. (After Jijón y Caamaño, 1927, pls. 47, 56.)

The Esmeraldas rivers are notable for the gold and platinum trinkets which can be placered out of their lower courses. These minute artifacts are impressive chiefly for their delicacy and involved technical skill. Larger gold objects from Ecuador belonged to the metallurgical tradition of Colombia-Panamá. A piece in this tradition, a golden breastplate from Tola Island, in the mouth of the Santiago and Cayapas Rivers, is shown in plate 46, *f;* another, from Azuay, in the southern interior, in figure 126. The two are generically similar, but the Azuay one leans somewhat more to Perú stylistically; the arrangement of the teeth is Tiahuanacoid.

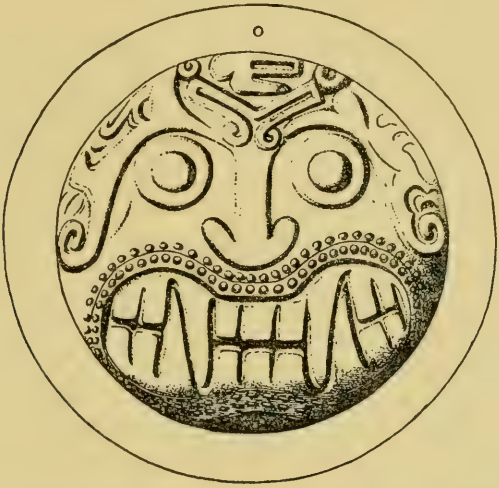

Figure 126.—Gold breastplate, Chordeleg, Azuay, Ecuador. (After Saville, 1924, pl. 5.)

In the interior, excavatory studies, yielding chiefly pottery, have been made in Carchi, Imbabura, Chimborazo, Tungurahua, and Azuay, but to date they have produced more data on local or successional types than esthetic significance. Characteristic of all the ceramic manners are tripods, high-pedestal bowls (compoteras), human body and face forms, and negative painting. The latter occasionally carries reminiscences of the Peruvian Cursive and Recuay styles of the North Highland, in which tripods, bases, and face and body modeling also occur. There has probably been some degree of actual historic connection. But the connection is not close, the styles remain distinct, and the Ecuadorean ones are the less developed. While straight *Inca* ware is found here and there in Ecuador, positive evidence of Tiahuanaco influence is lacking; and other styles, from Cupisnique-Chavín to Late Chimu, are represented only by rare trade pieces. The naturalistically modeled seated man jar from Cusin in Imbabura

(Uhle, 1933, pl. 1: "figura legítima maya") is artistically superior to anything else as yet reported from Ecuador or Colombia, and until it is confirmed by additional examples, it must be construed as the result of ancient or modern trade. However, two other seated figures in pottery (Uhle, 1933, pl. 2) from Alor, Carchi, can perhaps be accepted as of local origin; though they also stand somewhat apart in their degree of naturalism. Of vessels, four jars from the southern and northern highland, much above average esthetically, are shown in plate 46, *b*, and figure 125, *left*, *right*.

## COLOMBIA

Ancient Colombia had progressed but little farther than Ecuador in its ceramics, but was the center of a distinctive metallurgical development, and at San Agustín produced a stone sculpture which, alone in the continent, rivals in impressiveness that of the Perú-Bolivian Highlands. The *Chibcha* were relatively backward in all three arts, though rated politically the most advanced nationality of the country. Hernández de Alba recognizes at least 11 archeological areas in Colombia, of which Bennett (1944) deals with 9.

**Ceramics.**—In pottery there occur: tripods and pedestals, though less frequently than in Ecuador; both positive and negative painting; incising; and modeling, especially of human faces and bodies. In fact, one of the handicaps of Colombian potters was their obsession to make vessels suggest people: this attempt at inherently difficult representation before technological skill had been attained, weighed down their style and limited it in advance.

The nearest approach to freedom in modeling is found in the north, in the regions of Sinú and of lower Magdalena or "Mosquito" (Handbook, vol. 2, pl. 171, *e–h*). However, the Colombians were free of the propensity to run off into elaborate florid adornos in their pottery, such as prevailed in much of Venezuela, Brazil, and the West Indies.

If Seler's attributions (1893) can be trusted, *Chibcha* figurine and face jars are characterized by spindly arms, broad necks, narrow noses running higher than the eyes, lofty foreheads or helmets, and eyes and mouth consisting, almost identically, of a quite narrow rectangle or ribbon slit lengthwise (pl. 47, *e–h;* Handbook, vol. 2, pl. 172, *a–c*).

*Quimbaya* ware (Handbook, vol. 2, pl. 171, *a*, *b*) seems to model the human figure somewhat less conventionally than *Chibcha*. Unmodeled *Quimbaya* vessels (Handbook, vol. 2, pl. 172, *d*; fig. 94) come in relief, cut-away, incising, positive and negative painting, and at best achieve reasonably good taste.

*Tairona* or Santa Marta ceramics (Handbook, vol. 2, figs. 95–97) attain a certain exuberance, manifest in a great variety of shapes and in attempts at combination or representation whose ambitiousness surpasses the skill of the potters. Most of the *Tairona* vessels are black or otherwise monochrome, in keeping with the plastic urge of this art; which, however, is more interested in composition and variation of fundamental form than in superstructural floridity of adornment. It is an art which was still experimenting without having found defined channels.

In the south of Colombia, about Cali, Popayán, Pasto, and east thereof, in the archeological zones which have been called Upper Cauca, Nariño, Tierradentro, and San Agustín (see Handbook, vol. 2, map 8; pl. 169; figs. 91, 93, 98, 99), there is less modeling than to the north, and therewith a generic approach to the pottery manner of Ecuador.

**Metal.**—Colombian metallurgy is basically one with that of Ecuador and the Isthmus, and was directed toward jewelry, wealth display, and offerings, not toward tools. It was essentially an art in gold, with copper used to dilute the gold and make it go farther, or to harden it or lower its melting point. All proportions of copper-gold mixture (tumbaga, guanín) occur, with burnished gold surface sometimes brought out by means of organic acids (mise en couleur); or sometimes by gold-leaf plating; assertedly also by mercury-amalgam plating. Silver was not isolated, but sometimes appears in gold in the proportion which it constituted in the original nuggets. The same holds for platinum in southern Colombia and northern Ecuador. With some exceptions, larger figures have little solidity, but the gold is stretched flat to produce the greatest area. The majority of pieces, therefore, are basically two-dimensional, with face features, adornments, or weapons shown in a sort of relief (pl. 46, *d*, *Chibcha*). Two treatments were given gold: beating and casting. Sheets hammered out, apparently directly from nuggets, were cut into shape and embossed (repoussé), presumably over stone or wooden forms (fig. 127, Antioquia; Handbook, vol. 2, pl. 170, *h*, *i*, *Quimbaya*). Casting was sometimes in open molds but usually by cire perdue. Cast pieces of some roundness, especially among the *Quimbaya*, occasionally present pleasing curved planes suggestive of sculptural form and texture (pl. 47, *d;* also Handbook, vol. 2, pl. 170, *a*, *c;* all *Quimbaya*). But more castings are of the flat type, and consist of shaped sheets thick enough to hold their form, with small additions or excrescences of wirelike filigree. The latter also occurs alone (pl. 47, *j*, Antioquia; Handbook, vol. 2, pl. 170, *e*, *Quimbaya*). There probably was some self-soldering of attachments to the base sheet; but in the main, the fine ornament was wax-cast as an integral part of the object. There is no evidence of any actual wire-drawing: Ecuadorean loose wire was presumably rolled. All attached wire or filigree seems to have been metal repro-

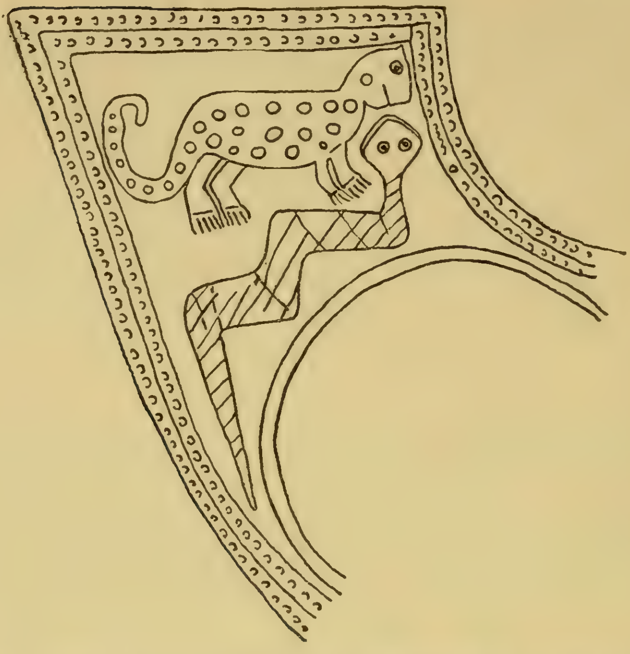

Figure 127.—Design on crescentic brestplate of beaten gold, Antioquia, Colombia. (Traced from Farabee, 1920, fig. 62.)

duction of wax threads rolled out in the model. Consequently, the filigree is in a sense spurious, being cire perdue.

The highest development of this art was along the middle Cauca, in the region of Antioquia and the *Quimbaya*. *Chibcha* goldwork, east of the Magdalena, is definitely inferior; Sinú ornaments retain somewhat more of *Quimbaya* curvature and manner; and Chiriquí and Coclé in Panamá still belong in the same tradition. Historical mentions suggest that closely related technologies and styles extended through northern Venezuela, Guiana, into the Antilles; but almost no specimens remain.

**Sculpture.**—The famous San Agustín sculpture is confined to a small area east of the headwaters of the Magdalena, and while the associated type of pottery is known—it is quite meager stylistically (Handbook, vol. 2, fig. 99)—very little is yet understood of the affiliations of this monumental stone art (pl. 47, *a–c*, *i;* fig. 128). Compared with Chavín and Tiahuanaco, San Agustín sculpture is obviously crude in conception and execution. The statues shown in plate 47, *a*, *b*, represent the limit of attainment by the style of a definite manner and degree of finish. Everything wavers in this art. Eyes may be circles, semicircles, crescents, almonds, or commas. Mouths show their teeth according to the specific Tiahuanaco schema (fig. 128), or Chavinoid protruding tusks (pl. 47, *b*, *c*, *i*) or a blend of the two, or are narrow and miniature slits. Noses, it is true, have an invariably broad base, and average perhaps as wide as high; but they, too, vary—from triangles to inverted T's. Proportions of width to height of the total statue range from three-fourths to three-tenths; in the figures with pick-a-back rider (alter ego, tutelary diety?—pl. 47, *a*) the proportion is around one-third. The San Agustín "statues" really are only slabs or quadrilateral prisms carved on one or three or four sides; yet there scarcely exists a genuine relief sculpturing of surfaces as such. The figures are even less extricated from the block than Highland Peruvian sculpture. Just so, they are less channeled into a coherent style: each piece begins all over again to express its own ideas, without much reference to a previously achieved manner of expression. Since the statues run up to several meters high and to a weight of some tons, the result is an effect of monumentality, of stolid weight, of labored feeling, of barbaric strangeness verging on the monstrous, of minimal organization of parts, of almost no beauty of line or flow of surface; and yet of indubitable impressiveness. (Compare also Handbook, vol. 2, pls. 173, 174, 176.)

The affiliations, and, therefore, also the age, of San Agustín are obscure. Now and then there is an idea of form which can be paralleled in México, *Maya*, Chavín, or Tiahuanaco; but these ideas come

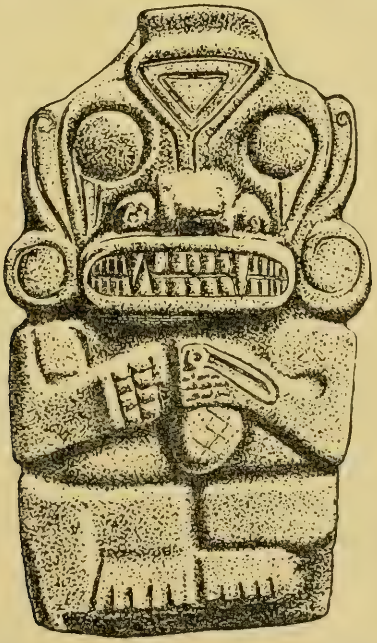

FIGURE 128.—Statue, San Agustín, Colombia. (After Lothrop, 1937 a, fig. 97.)

and go, and associate so irregularly, that no consistent tie-up anywhere emerges. It is possible that Chavín, Tiahuanaco, or other Peruvian Highland influences reached San Agustín; but the main development of the art must have been local.

## ISTHMIAN AREA

Panamá, Costa Rica, and in some degree Nicaragua show affinities with South America in their art as in most of their culture (and in part language). Four areas of characterization stand out in eastern Central America. These areas are: Coclé in Panamá; Chiriquí, farther west in Panamá; a "Highland" region mainly in northern Costa Rica, east and northeast of the Gulf of Nicoya; and a *Chorotegan* or "Pacific" area from the Gulf of Nicoya to that of Fonseca, in both Costa Rica and Nicaragua. These regions of art development are mainly on the Pacific slope of the Isthmus; only the "Highland" center extends to the Atlantic. The arts of the four areas constitute as many local variants of one basic growth, with Coclé probably most advanced in goldwork and *Chorotegan* in ceramics. Some *Maya* influences are perceptible in the *Chorotegan* area; and beyond it, to the northwest, we are in a region marginal to and frankly dependent on the Mexican-*Mayan* culture. But south and east of the *Chorotegan* area, it is Mexican-*Mayan* resemblances that are diffuse and generic, and South American ones that are much the more evident.

**Coclé.**—This culture has become famous for its tomb hoards of gold. The type of metallurgy is that of Colombia and Ecuador; so is the style, basically. Figures 129, 132, 133, 134 (also Handbook, vol. 4, fig. 39) show castings—figures 132 and 134 of copper-gold alloy; and the last being a figure traded to and found at the *Maya* city of Chichen Itzá. As a group, these specimens illustrate the Coclé tendency to operate with flat, even sheetlike, castings. The crocodiles of figure 133 are developed into decoratively pleasing curves. The warriors of figure 132 are more representational and elaborate; and the bat god of figure 129—in whose center a round pyrite mirror was set—is ornate and ugly, largely because of the incongruity of the parts, some of which, by themselves, would be agreeable enough.

Examples of beaten sheet gold appear in figures 130, 131 (and in Handbook, vol. 4, pl. 20, *d*). The generic resemblance to the embossed sheet gold of Colombia and Ecuador is evident. The face in figure 130 even has Tiahuanacoid teeth. Both designs—like most Coclé designs—are barbaric (cf. fig. 126, Azuay); but the simple features of figure 130 give at least an effect of monumentality and repose, whereas the complexities of the pattern of figure 131 make only for an unbeautiful, restless intricacy.

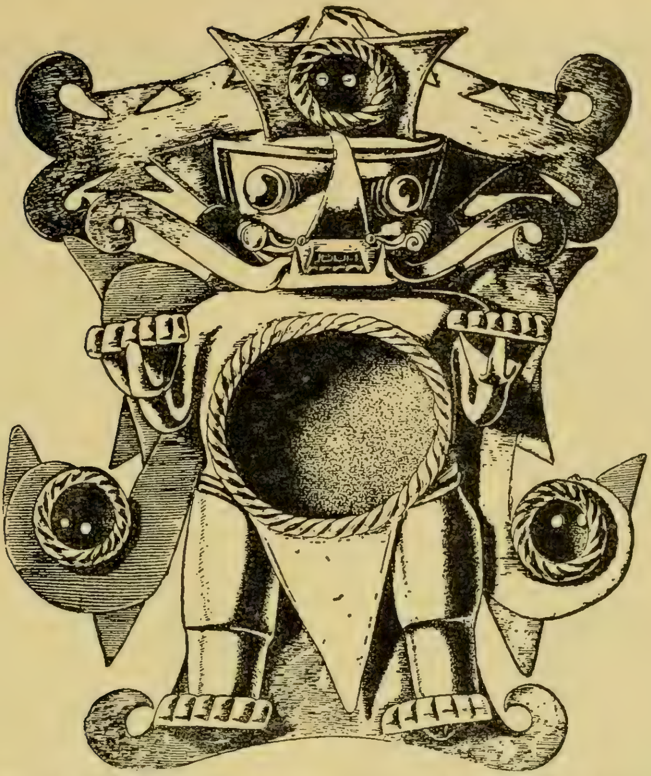

Figure 129.—Cast gold mirror frame: ornate bat. Coclé. (After Lothrop, 1937 a, fig. 71.)

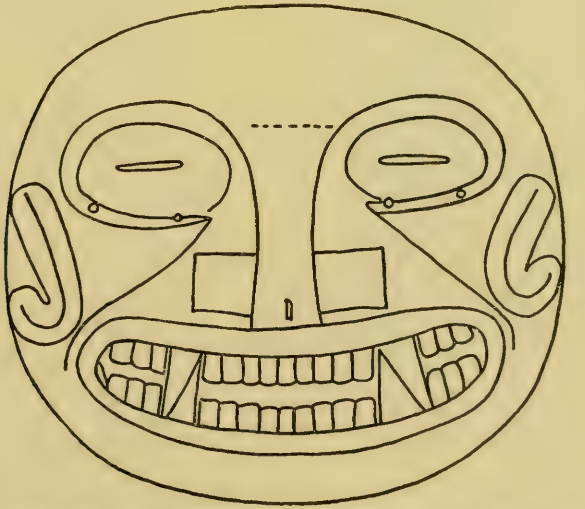

Figure 130.—Gold face disk with Tiahuanacoid teeth. Coclé. (After Lothrop, 1937 a, fig. 96.)

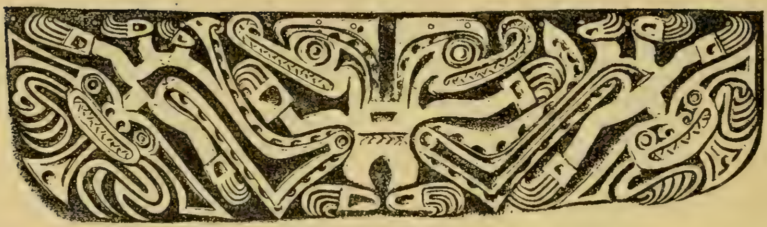

Figure 131.—Design on gold helmet. Coclé. (After Lothrop, 1937 a, fig. 105.)

The Coclé goldsmiths combined gold with emeralds, opal, quartz, and serpentine into ear rods and other jewelry (Handbook, vol. 4, pl. 20, *a*, *b*, *d;* fig. 40). Gold was also joined with whale-tooth ivory to make pendants (Handbook, vol. 4, fig. 37, *a*). Similar pendants without gold also occur: of whale tooth (fig. 135, *left*) or bone (fig. 135, *right*); the style is basically that of metalwork.

Coclé ceramics are mainly in the "Early" and "Late" Coclé Polychrome styles, which however were both rather late. Lothrop's estimate dating is: Early, 1330–1430; Late, 1430–1490; Decline, 1490–1520. The main phases are exemplified in figures 136, 137, *left* (Early), and 137, *right* (Late; see also Handbook, vol. 4, figs. 30–33 for Early and figs. 34, 35, for Late). The two are obviously stages of one

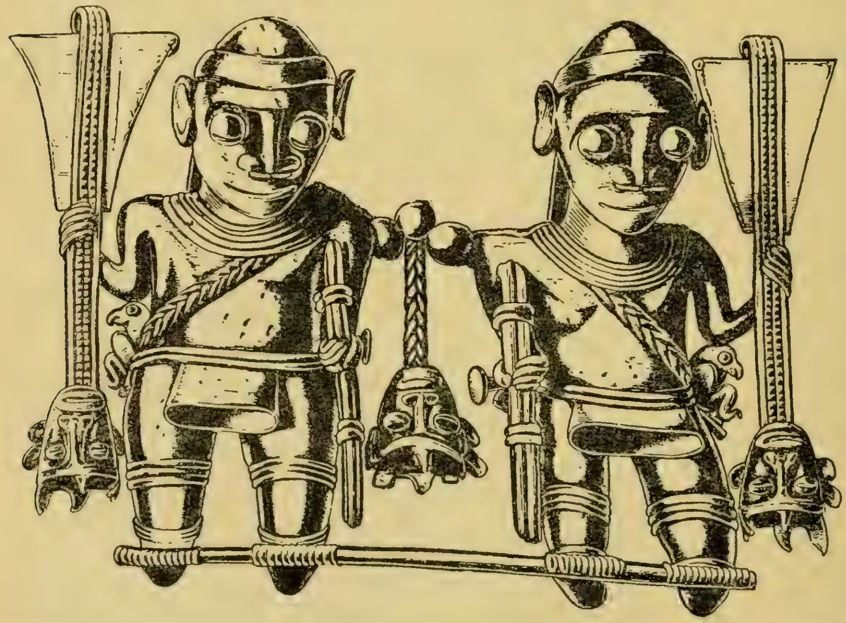

Figure 132.—Pendant of cast tumbaga, showing warriors. (After Lothrop, 1937 a, fig. 150.)

style, and not very different. The wares are technically good and the patterns thoroughly appropriate and competent. Designs are free, flowing, and sure. Figure 136, *right*, illustrates the ability of Coclé potters to combine curves effectively with straight lines and sharp angles. Probably the majority of the designs have a zoomorphic stimulus or secondary suggestion; but there is a wise avoidance of attempts at realism, for which the painter's training and skill would probably not have sufficed. The Early phase is perhaps a bit the more animated and vigorous. All in all, Coclé pottery probably fails quite to equal *Chorotegan* in quality, but certainly surpasses anything Andean north of Mochica-Chimu; as well as most wares of the South American Tropical Forest except Marajó and its irradiations.

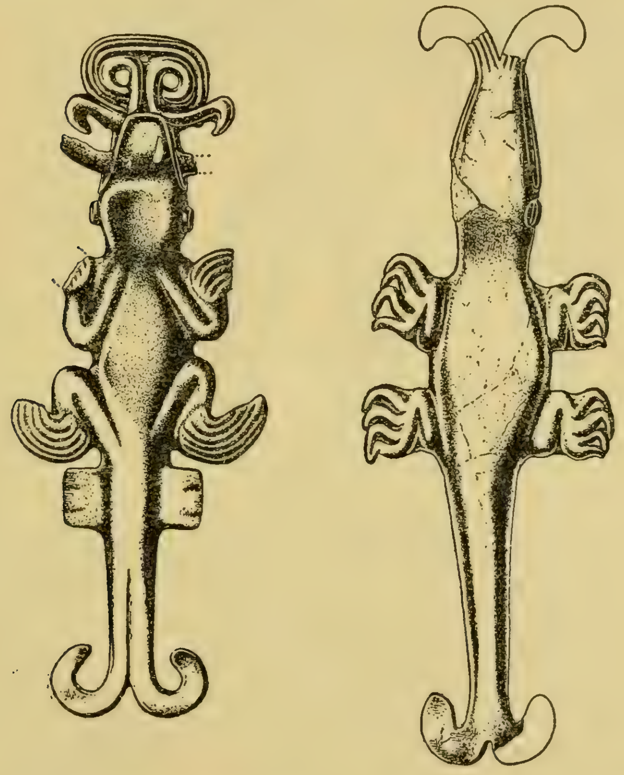

FIGURE 133.—Crocodile pendants, cast. Coclé. (After Lothrop, 1937 a, fig. 155.)

**Chiriquí.**—Chiriquí pottery has been well known much longer than Coclé and has served as material for studies of conventionalization of motifs, as of alligator or caiman. It is related to Coclé, but less

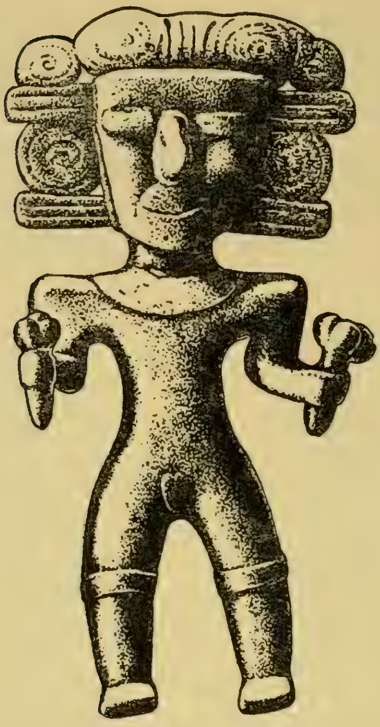

FIGURE 134.—Human figure cast in tumbaga, Coclé style, found at Chichen Itzá. (After Lothrop, 1942, fig. 395.)

ambitious; as is the metallurgy. There are more tripods in Chiriquí, fewer bowls and jars; more appliqué and modeling (fig. 138); less painted design (fig. 139, *left*), and that averaging simpler. Negative or "lost color" painting is once more fairly prominent (fig. 139, *right*). There are numerous ocarinas in the shape of seated women. (See also Handbook, vol. 4, figs. 46, 47.)

**North Costa Rican Highland.**—Ceramically, this area is dependent on the next, much as Chiriquí is dependent on Coclé. There is less polychrome, more appliqué and modeling of high tripods, more negative design, and less imagination, finish, and skill. Figure 140, after Lothrop, shows characteristic shapes (*a–d*) and designs (*e–h*). (See also Handbook, vol. 4, pl. 18, and fig. 24.)

**Chorotegan.**—From the Peninsula of Nicoya, where it centers, northwest to include Lake Nicaragua and its islands, and as far as the Gulf of Fonseca, is Lothrop's "Pacific" culture (of Costa Rica-Nicaragua), in which the *Chorotega* or *Mangue* seem to have been the leading people and in which a high pottery art flourished. The peak of this ceramic was reached in Nicoya Polychrome Ware (fig. 141, *a–i*), with Luna Polychrome perhaps derivative and certainly allied. The

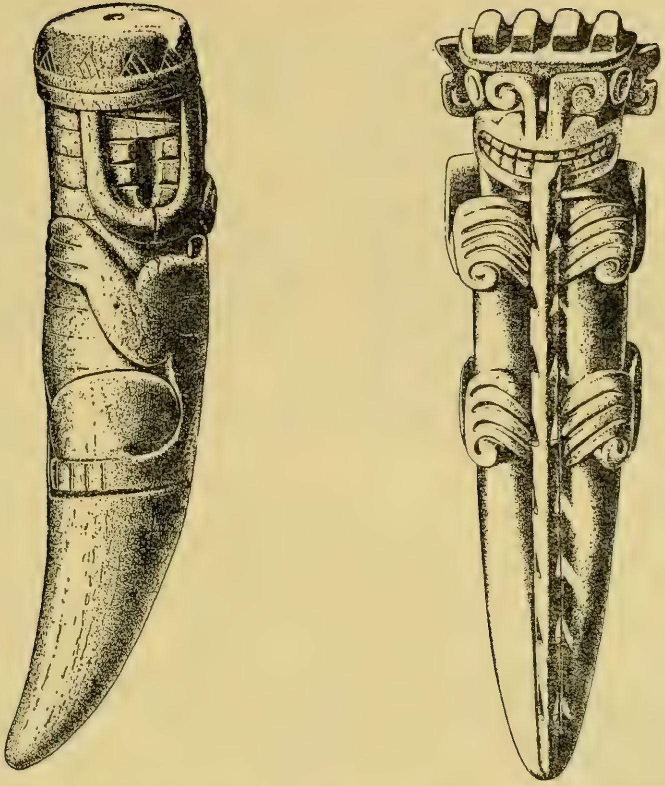

FIGURE 135.—Whale-tooth pendant and bone pendant: crocodiles, Coclé. (After Lothrop, 1937 a, figs. 159, 162.)

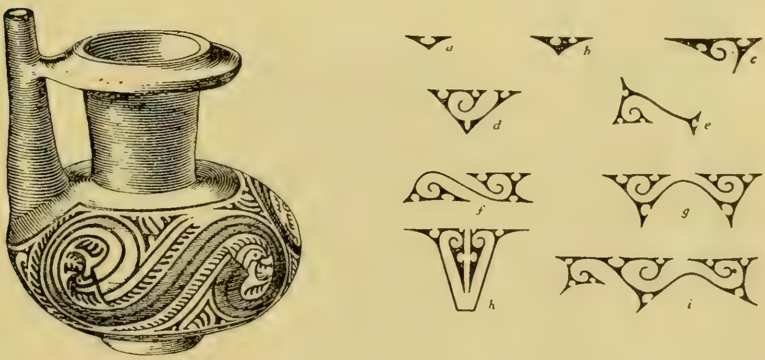

FIGURE 136.—Coclé Early Polychrome. *Left:* Spout-handled jar. *Right:* Design space fillers. (After Lothrop, 1942, figs. 11, 131.)

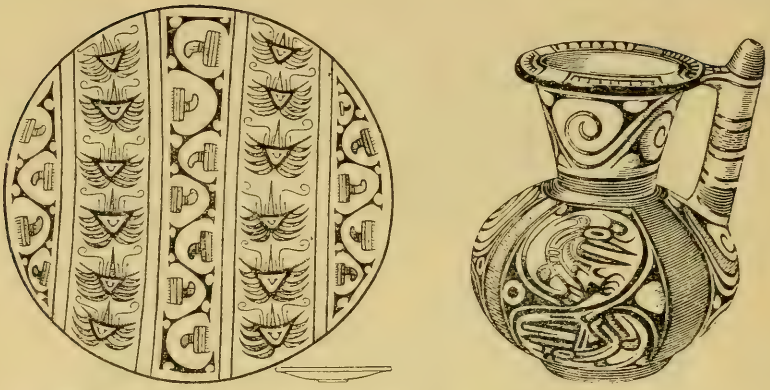

FIGURE 137.—Coclé Early and Late Polychrome designs. *Left:* Early Polychrome plate. *Right:* Late Polychrome jar. (After Lothrop, 1942, figs. 374, 197.)

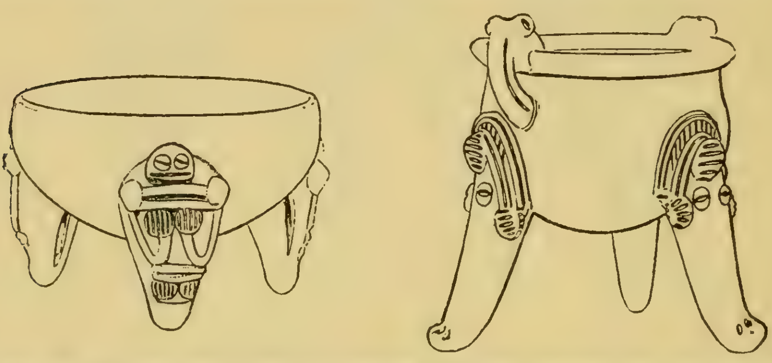

FIGURE 138.—Tripod bowls, Chiriquí, Panamá. (After Holmes, 1888, figs. 95, 145.)

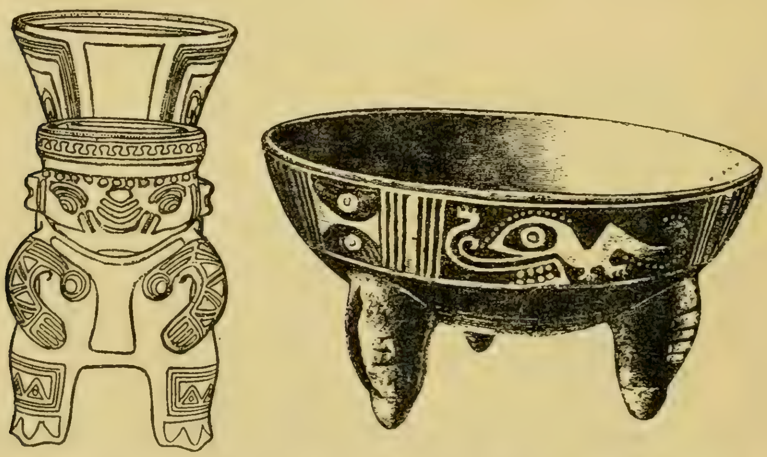

FIGURE 139.—Chiriquí ware. *Left:* Figure jar, painted. *Right:* Tripod bowl, negative painting, "alligator" motif. (After Holmes, 1888, figs. 206, 192.)

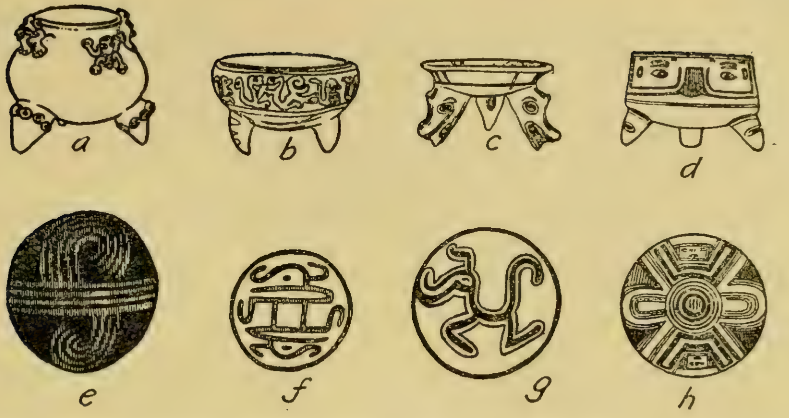

FIGURE 140.—Costa Rica Highland ware. Shapes: *a*, Monochrome; *b*, Negative; *c*, Red line; *d*, Polychrome. Designs: *e*, Negative; *f*, Red line; *g*, *h*, Polychrome. (After Lothrop, 1926, pl. 194.)

Nicoya ware uses some modeling, and its polychrome designs range from geometric to representative. It even attempts some scenes of action (fig. 141, *g;* and Lothrop, 1926, pls. 31–33). Favorite motifs are the jaguar, monkey, crab, alligator, and feathered serpent. The

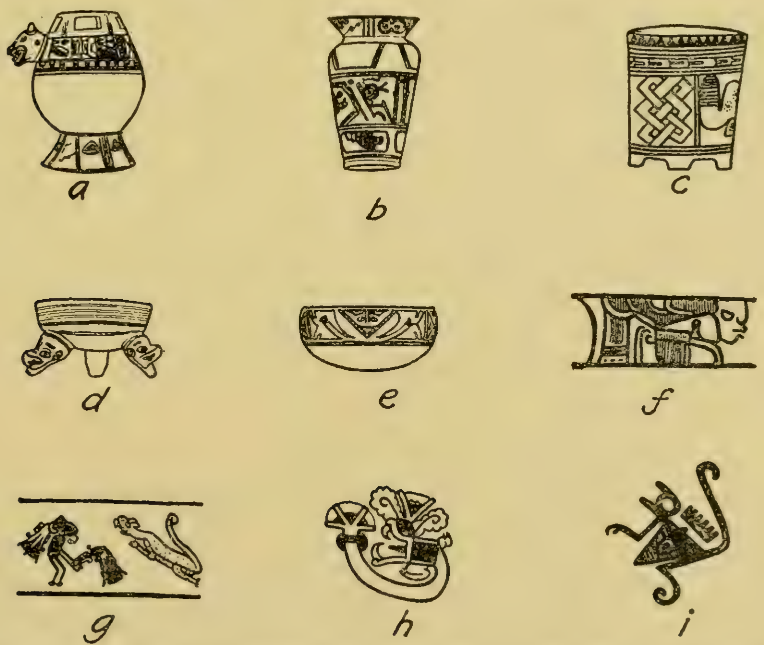

FIGURE 141.—Nicoya Polychrome ware. Costa Rica and Nicaragua. *a–e*, Shapes; *f*, human design; *g*, man and jaguar; *h*, feathered serpent; *i*, monkey. (After Lothrop, 1926, pl. 193.)

level and general manner of the art are similar to those of Coclé Polychrome; although as particular styles, or substyles of one tradition, they are well differentiated. Nicoya designs are somewhat the bolder and more massive. They possess some direct and indubitable similarities to *Maya* ceramic designs; which cannot be said of Coclé. (See also Handbook, vol. 4, pl. 16, and fig. 19.)

The history of the Isthmian stylistic developments is unclear. Lothrop (1926) has Nicoya Polychrome influenced by "Old Empire" *Maya* (see his convincing pls. 26, 28, 44–46, 57, 60, 69) through designs which did not continue into Late *Maya* (p. 394). On the contrary, Luna Polychrome, centering in the islands of Lake Nicaragua, "fuses" with Nicoya Polychrome north of Nicoya Peninsula (Lothrop, 1926, p. 194), but persisted into 16th-century European contacts (p. 400) ! This is conceivable but it implies a stretch of six centuries between at least some time-points in the two styles which, however, also blended ! It is probable that the historic interrelations of the Isthmian styles can be solved only from data obtained through controlled excavations.

Sculpture and stonework in the Isthmian region essentially follow one tradition from Nicaragua to Panamá, and are of meager esthetic development (Handbook, vol. 4, pls. 13, 15, 27, and figs. 17, 45). Pieces from Nicaragua (Handbook, vol. 4, pl. 13, *a–c*, fig. 17, *a*, *c–e*) are more reminiscent of San Agustín in their groping manner and in their attachment to the block or column, than to the geographically so much nearer *Maya* sculpture. They are too inchoate stylistically to be compared conclusively with the also rather amorphous San Agustín "statues" as to a possible historical connection of the styles. If there was such a connection, it would be difficult to point out, in the embryonic development of the two styles; except for the occurrence in both of the pick-a-back or alter-ego theme. Most successful are the less ambitious efforts in stone carving: occasionally of figures (Handbook, vol. 4, pl. 15, *a–c*, Costa Rica), and of metates in the shape of jaguars, stools, or pedestaled bowls (Handbook, vol. 4, pl. 13, *f*, *g;* pl. 26, and figs. 20, 25, 43, 44).

### VENEZUELA-GUIANA

Venezuela and Guiana lacked stone architecture or sculpture, were without much metal, and the art best represented is pottery. And this is not of a specially high order, in accord with the general level of culture of the regions. The ceramics incline somewhat to the florid or rococo manner discussed below (p. 488) : adornos or superstructural ornaments are more developed than feeling for form of vessel or surface design. Modeling and incision prevail over painting. The basic line is curvilinear, and in the best examples of incising, the lines are

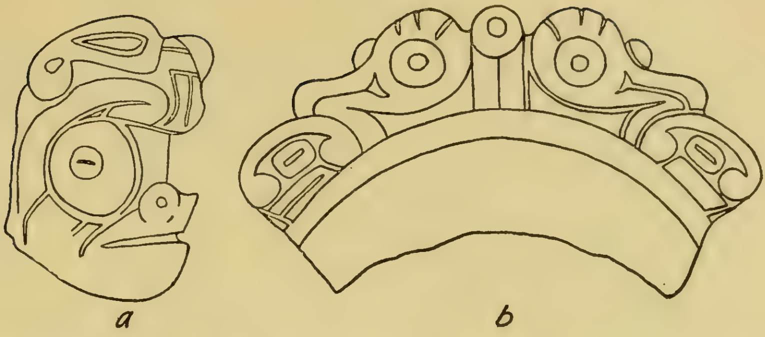

FIGURE 142.—Venezuela, Barrancos area: Modeled and incised pottery. (Traced from Osgood, 1943, figs. 22, 16; see bibliog., Hdbk. vol. 4.)

put together agreeably (fig. 142; Handbook, vol. 4, figs. 68, 69; also from Barrancos). However, such instances represent the esthetic peak of the art: the average product is scarcely even pleasing. The ware itself in general has little fineness, either of body or of texture. This is presumably the fundamental factor in the weakness of esthetic quality: energy in seeking ornateness is wasted if manual skill and technological interest are insufficiently developed. In volume 4 of the Handbook, plates 73–75 and figures 70–77 indicate the mediocrity of most Venezuelan modeled, incised, and painted pottery and shell and stone ornaments. British Guiana seems to go with Venezuela (fig. 143).

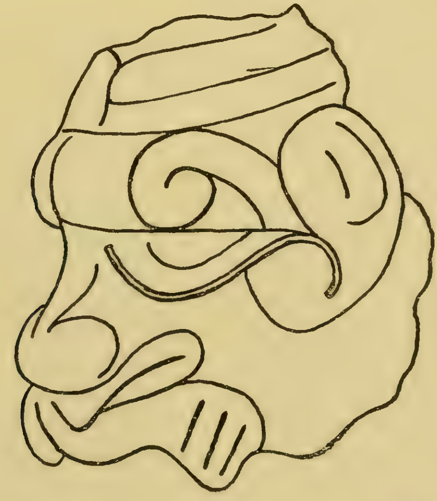

FIGURE 143.—British Guiana: Incised pottery adorno. (Traced from Palmatary, 1939, fig. 36; see bibliography, Handbook, vol. 4.)

## ANTILLES

The Antilles, populated by Indians speaking *Arawak* and *Carib*, are reckoned as affiliated with South America in culture as well. Their art was limited in scope and attainments: well-finished stone implements and cult objects, pottery at once ornate and crude, some wood carving (mostly lost), and occasional shell pieces. The highest development, generally ascribed to the *Arawak* or *Taino*, occurred in the islands of Puerto Rico and Haiti, and evidently represents a development on the spot. Cuba, Jamaica, the Bahamas to the west and north, and the Lesser Antilles to the south and east, show the same art efforts in a simpler phase.

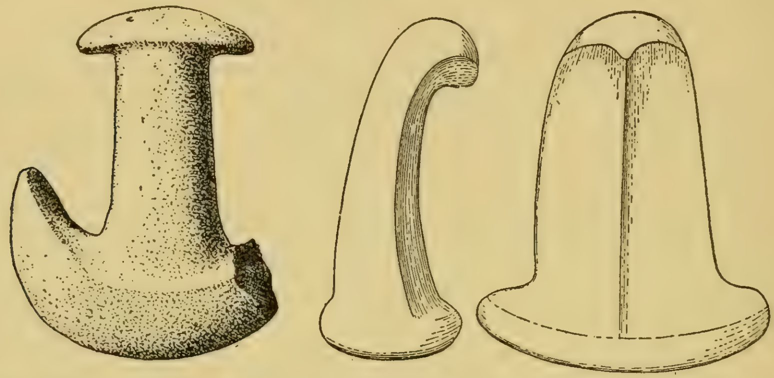

FIGURE 144.—Antilles: Stone pestles. *Left*, Guadelupe. *Right*, St. Kitts. (After Fewkes, 1922, pls. 81, 85.)

Stonework rests developmentally on the production of simple useful objects like celts or axes, which were given a graceful petaloid form and fine finish. Beyond these there were made flat-based pestles with a knob or animal head (figs. 144; 145, *left*); occasional "masks" or faces (figs. 145, *right;* 146; 147); elbow stones (fig. 148, *right*); stone "collars" (figs. 148, *left;* 149); three-cornered zemi stones or cult objects (figs. 150, 151); and stools of either stone or wood. (See also Handbook, vol. 4, pl. 88.) The pestles and masks seem to have been done best on Haiti, the elbows, zemis, and collars on Puerto Rico; but the two arts are closely connected. The characteristically Puerto Rican forms are the farthest from being utilitarian.

The three-cornered zemis are obviously a locally invented form. One end represents a head, the other legs; between, the main mass of the stone rises in a great hump to the third rounded corner. The stylization or conventionalization is strong, and appears to have saved the objects from being esthetic failures, since successful realism was beyond the *Taino*. Fewkes recognizes types I, II, III. Besides figures

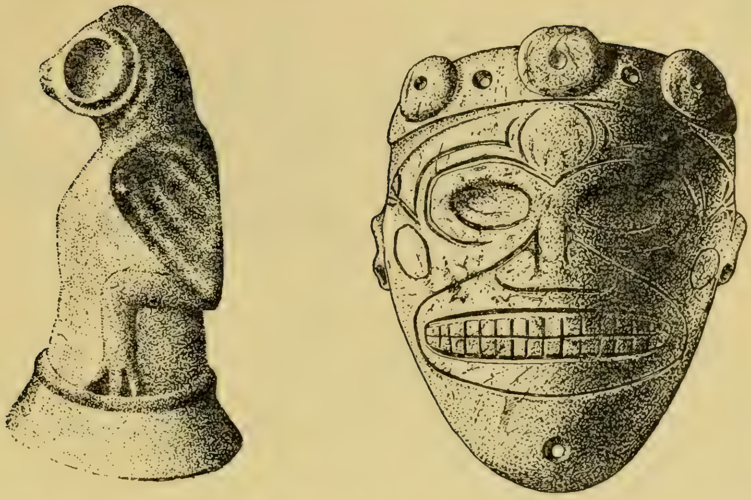

**Figure 145.**—Antilles: Stone pestle and shell face, Santo Domingo. (After Fewkes, 1907, fig. 14, and 1922, pl. 117.)

150, 151, see Fewkes, 1907, plates 32; 34, *c;* 38, *b;* 45, *b;* 46; 49; and 1922, plates 101, *a;* 106, *c;* 108, *d;* 109, *b;* the last is from Santo Domingo, the rest from Puerto Rico.

The stone collars involve delicate craftsmanship and have a pleasing, slightly asymmetrical shape, but decoration is mostly confined to one or two "knobs." (See figs. 148, 149; and Fewkes, 1907, pl. 67; and 1922, pl. 95.) These objects, reminiscent in general outline of our horsecollars, also suggest the *Totonac* and *Olmec* stone yokes of Vera Cruz. A moment's comparison, however, reveals the *Totonac* yokes, with their rich surface relief, as local manifestations in the tradition of great Mexican art, against which the Antillean collars are little more than expressions of skillful artisanship. There is unlikely to be close

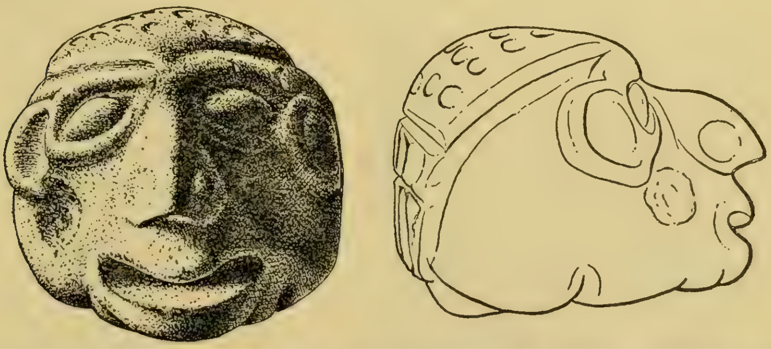

**Figure 146.**—Antilles: Stone head, face and profile, St. Vincent. (After Fewkes, 1922, pls. 45, 51.)

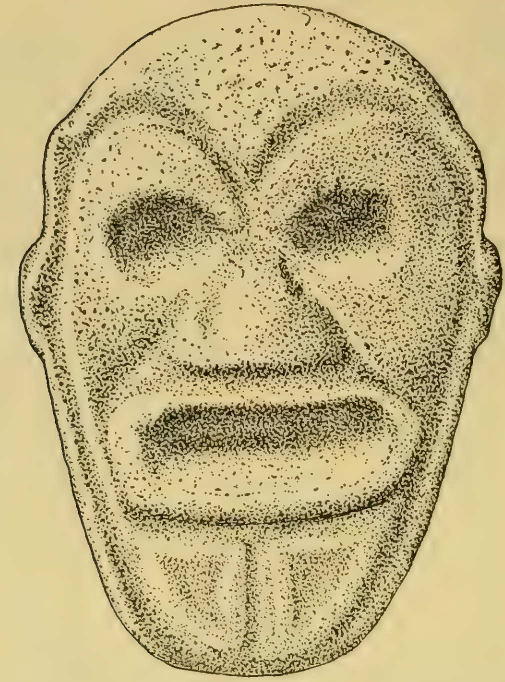

Figure 147.—Antilles: Stone "mask," Haiti. (After Fewkes, 1922, pl. 94.)

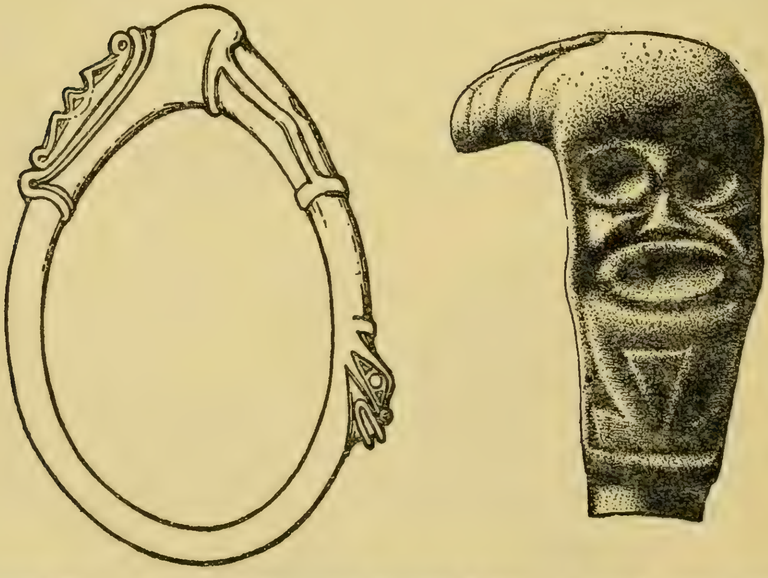

Figure 148.—Antilles: Stone collar and elbow stone with face, Puerto Rico. (After Fewkes, 1922, fig. 34 and pl. 98.)

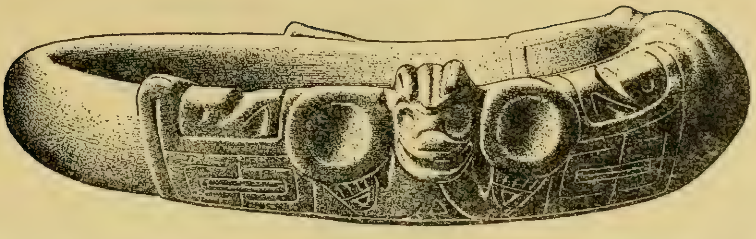

Figure 149.—Antilles: Stone collar, Puerto Rico. (After Fewkes, 1922, pl. 95.)

historical relation between the types, although some connection of origin seems inescapable.

Human faces on pestles, "masks," and elbow stones are characterized by overly large, deep-set eyes, usually round; by a wide, large mouth, most often without teeth; by a nose generally convex, often broad at the base, and set high between the eyes; sometimes by accentuated eyebrow arcs; and on the whole by a simple structure of the features (figs. 145–148).

Stools or duhos are low, four-legged, and with a long, reclining back, sometimes with a carved head at one end.

Simple stone objects, such as "pestles," with pleasing curved planes reminiscent of petaloid forms and expressive of loving stone-shaping, are characteristic chiefly of the Lesser Antilles (fig. 144).

Woodworking has, of course, mostly perished, but the available remains show enough similarity of forms to stone carving to suggest derivation of one from the other. (See figures 152, 153; Handbook, vol. 4, pl. 89; also Fewkes, 1907, pls. 88–93.) There may be historic relationship to the carved wood recovered from southern Florida muck; though such relationship must not be assumed too lightly, both because

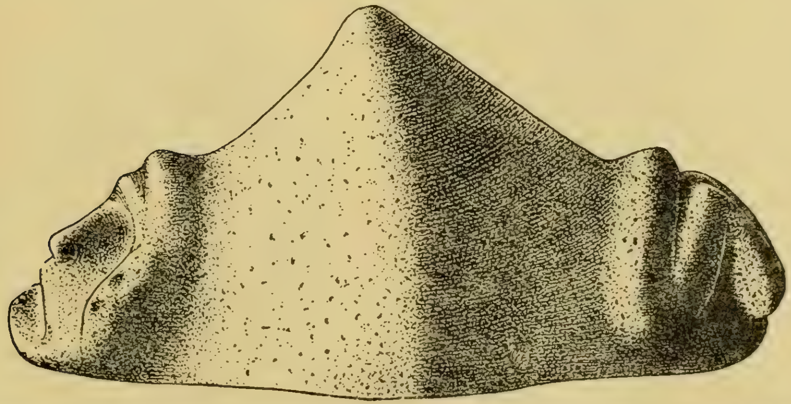

Figure 150.—Antilles: Three-pointed stone, type 1, Puerto Rico. (After Fewkes, 1922, pl. 106.)

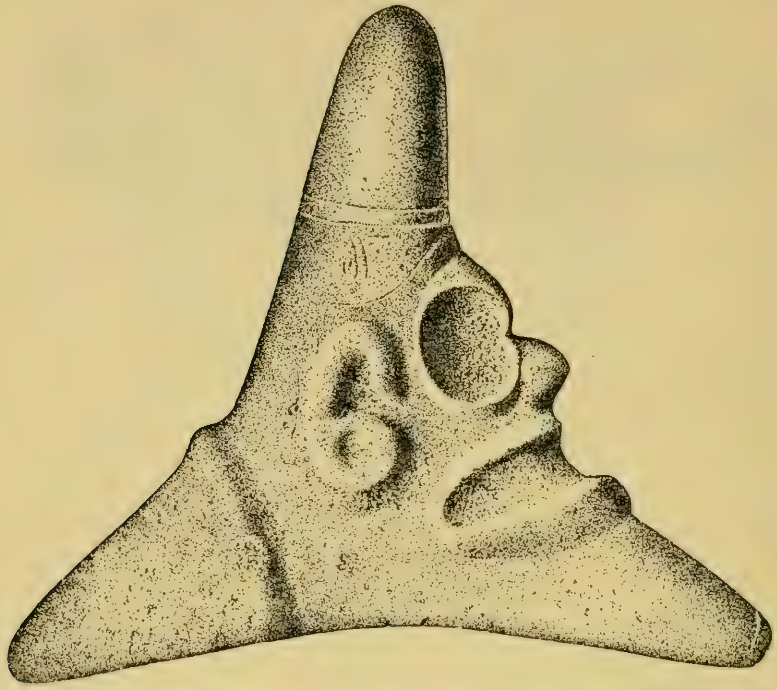

Figure 151.—Antilles: Three-pointed stone, type 2, Puerto Rico. (After Fewkes, 1907, fig. 21.)

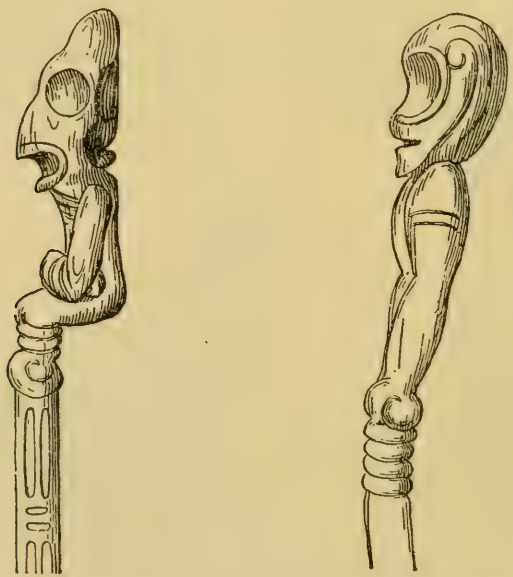

Figure 152.—Antilles: Wooden figures, Santo Domingo. (After Fewkes, 1907, pl. 88.)

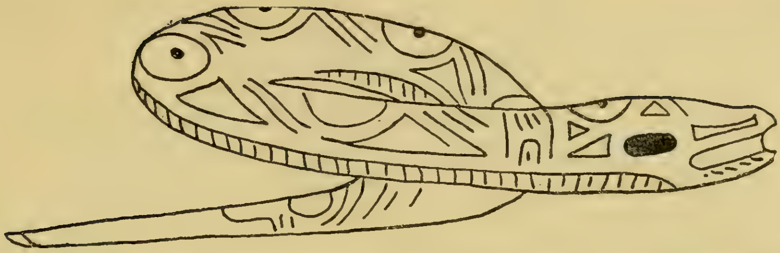

FIGURE 153.—Antilles: Wooden serpent, Santo Domingo. (After Fewkes, 1907, pl. 90.)

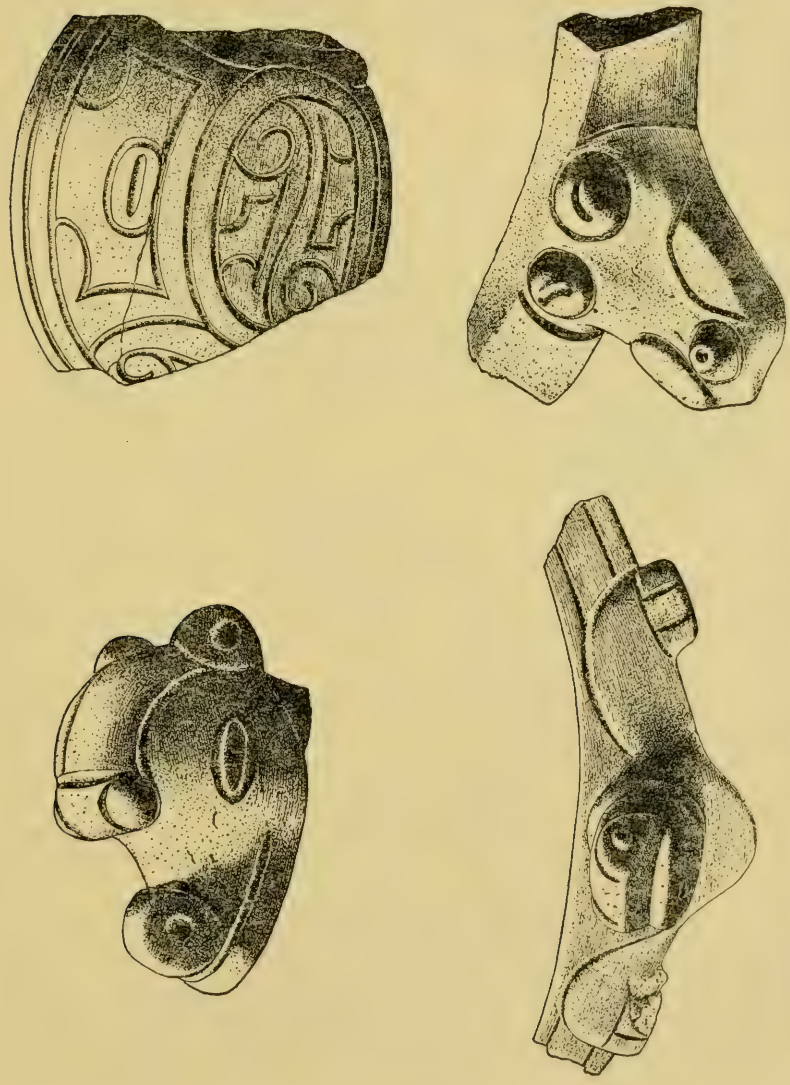

FIGURE 154.—Antilles: Pottery rims and adornos, incised. (After Fewkes, 1922, pls. 2, 3, 5, 8.)

of the esthetic superiority of the Florida specimens, and because of the lower level of art in intervening Cuba.

Metallurgy was not, strictly, an Antillean art. Cast specimens of guanín, copper-gold alloy, were imported from the South American mainland. Island gold from washings was simply beaten into thin sheets and punched or pressed, without either cold or hot welding.

Antillean pottery suffers from the same defect as much of that of northern South America; impulses toward ornament and representation are stronger than interest in technique or control of form. The effect is that of a certain crudeness or childlikeness. This is particularly true of the endless animal and human heads, bodies, and parts of bodies made either in appliqué or by modeling. The more ambitious the endeavor, the more inferior it is likely to be. The same holds of much of the modeled pottery of Florida. By contrast, when the Antilleans forewent the free representation of form and confined themselves to curvilinear geometric incision of surfaces, they did much better. They achieved definitely pleasing results, and these might have been developed into a more elaborate tradition. This is equally true of wood, stone, and pottery. In spite of their persistent efforts at free modeling, they evidently lacked the necessary combination of creative imagination and manual coordination; whereas the flowing lines of their simple incised designs appeal as unstrained and satisfying. Figures 154 and 155 show some examples, whose pleasing effect lies not in their representativeness but in the design of their curving planes or incised lines. The same quality may carry over into incised

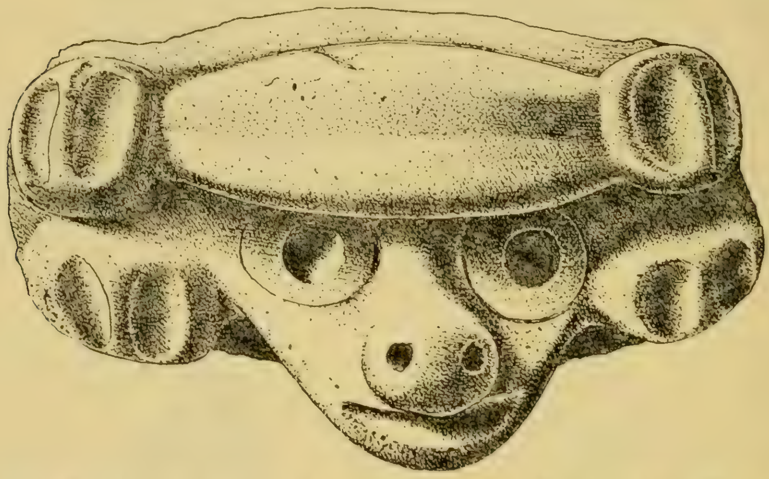

Figure 155.—Antilles: Pottery adorno, Carriacou. (After Fewkes, 1922, pl. 65.)

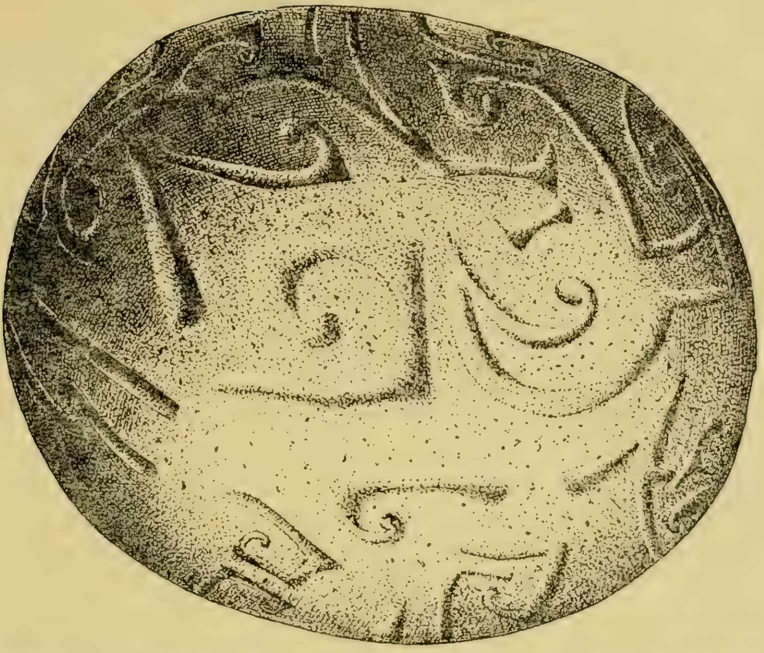

FIGURE 156.—Antilles: Incised mortar bottom, Puerto Rico. (After Fewkes, 1922, pl. 112.)

stone (fig. 156) or wood (fig. 153). Other examples of pottery appear in volume 4, plate 87.

These scattering productions suggest that by concentration along this line, the *Taino* might have attained to a well-defined decorative style about equal in quality to that of the best Lower and Middle Mississippi pottery; which level actually they scarcely reached. Their art was retarded by being geographically in a blind alley open to influences chiefly from northerly South America, which had only limited inspiration to give them; whereas internal stimuli evidently sufficed only for the evolution of a few minor specialties like the three-cornered zemi.

Howard (1947) finds that in pottery the Greater Antilles have been directly influenced from the Orinocan mainland only in their earliest ceramic or Cuevas Period, subsequent styles being local developments or spreads.

One quality which pervades almost all Antillean art, whether in stone, wood, or ceramics, is a certain flowing softness. Its productions are often simple, but almost never harsh. Planes are rounded as though they might have been licked off, or their surfaces partly melted away; stonework suggests that its texture was attained by persistent gentle rubbing.

## MARAJÓ AND IRRADIATIONS

A remarkable ceramic art once flourished on and about the large island of Marajó, in the mouth of the Amazon. Pacoval Island in Lake Ararí, within Marajó, is perhaps the best known site for its remains. Collections have found their way into many museums in several continents; but little is known about the rest of the culture. Nor are its extinct carriers well identified. In any event, the pottery is esthetically advanced and deserves special consideration.

There are funerary jars, bowls, tangas, and other forms. Decorative devices include modeling, incising, cutting away of the surface, and painting. Frequently, several of these techniques are combined in one vessel. Figure modeling—as usual in South America other than parts of Perú—is the least successful; relief is more skilfully combined with incision or painting, giving sometimes the richly decorative effect of a Shang or Chou Chinese bronze (pl. 48, *a*). Low relief by cutting away, by incising, and painting tend to come associated, and are often difficult to distinguish in photographs. A flat relief band may be painted and then divided by a longitudinal incision. Pure painting also occurs.

Figure modeling is characterized by largish eyes often divided horizontally, a nose connected with the eyebrows into a dominant T-figure, a mouth either narrow or underdeveloped, spindling arms. By contrast, surface decoration is overwhemingly pattern ornament, in which representation is discernible only occasionally or doubtfully. In other words, stylization has been carried far, and is intricate and usually continuous; blank areas are rare. The fundamental motif varies from a fret or rectangular spiral at its fullest (fig. 157, *right*)

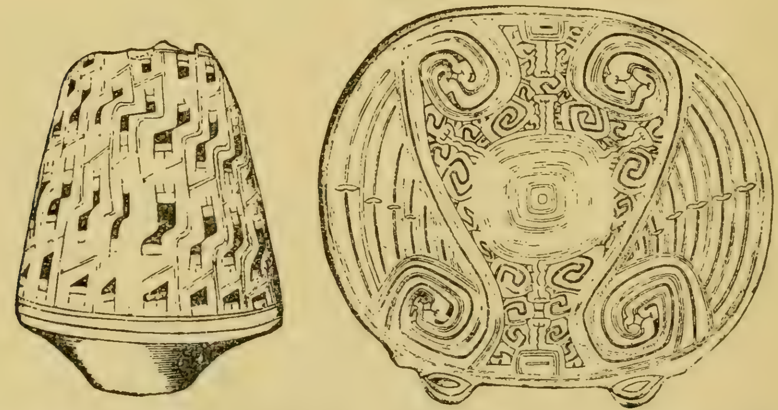

FIGURE 157.—Marajó: Jar and bowl. *Left:* Jar, Pacoval Island, Marajó; white, incised, dark areas scraped and reddened. *Right:* Bowl, Pacoval Island, Marajó. (After Hartt, 1871, fig. 64, and Lange, 1914, p. 312.)

to an E- or L-figure at its simplest (pl. 48, *d*), with all transitions. The fret usually has some rounding of corners and may become a completely rounded spiral, but its basic quadrangular character is usually evident. Sharp angles are more conspicuous in the simpler L-, H-, or E-forms. These are skillfully staggered to oppose or interlock (pl. 48, *c*, *d;* fig. 158). The design arrangement may be: symmetrical, often on both sides of an arched area (pl. 48, *a*); or horizontal or banded (pl. 48, *b*, *d*); or diagonal; or grouped around a center (pl. 48, *c*). The design lines are frequently double (pl. 48, *a*, *b;* fig. 157); or again a heavy line or band may be paralleled by a fine line or band of lighter value or color (pl. 48, *c*). There are occasional thickenings of lines into areas of solid color; or there may be free-standing masses (pl. 48, *b;* fig. 157, *left*). The thin line, single or double, may be used as a frame for individual repetitions of heavier motifs, and at the same time as a net to draw these heavier masses together into a continuous pattern (pl. 48, *d;* figs. 157, 158). Straight and curved lines occur separately (pl. 48, *d;* figs. 157, *right;* 158), but also in difficult but successful juxtaposition (pl. 48, *a*, *b*, *c*). All these design devices, and numerous others, add up to a rich and imaginative decorative style, exceedingly varied in its expressions and yet unified in feeling, and as successful in element detail as in over-all effect. (See also Handbook, vol. 3, pls. 16–18; fig. 16.)

Except for its pottery and mounds, this Marajó culture is as good as unknown. There are no stone, metal, or textile specimens. It can best be understood, accordingly, as a culture which, already possessed of a competent ceramic art, happened to produce a gifted individual or two who added new ideas and treatments, and thereby opened an opportunity for other endowed artists to make their contributions,

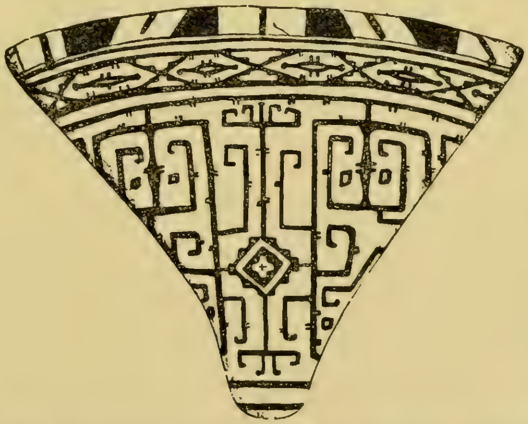

FIGURE 158.—Marajó: Pottery tanga, worn on genitals. (After Lange, 1914, p. 305.)

until the developed style became the property of more imitative potters. There is little indication of the art being connected with a major system of mythologic or ritual symbolism, as Chavín certainly was: its references seem essentially funerary. This interpretation may be modifiable by future explorations directed at problems rather than at artifacts, but it seems a reasonable present hypothesis.

Ancient pottery similar to that of Marajó has been found on Caviana Island, a little to the north, and on the Gurupí River to the southeast. More remarkable, however, on account of both distance and lapse of time, is the resemblance to decoration on ware made by certain modern primitive tribes far up the Amazon drainage, along or near the lower Ucayali and Huallaga. This is two-color ware on a light ground, sometimes covered and illuminated by a resinous coat. There are the same basic design figures—complete or incomplete rectangular spirals; the same engagement or interlocking of these figures into an over-all pattern; and the same paralleling of heavy lines or bands by delicate thin ones (pl. 48, *e*). The stylistic similarity leaves no serious doubt of an historical relationship. East Peruvian primitives of today are executing in their own tribal manner the reflex of a ceramic style which existed among the former Marajoans in a more complex and developed form.

The Indians of Marajó at the time of discovery are reckoned as *Arawak*. This family has been cited for its superior pottery in most of the regions which it occupies in the continent. Marajó art may perhaps be a culmination of an old *Arawak* tradition. But the contemporary tribes in the Peruvian Montaña whose ware shows the most similarity of style and design to Marajó are of *Panoan* family, such as the *Conibo* and *Shipibo Chama* and the *Panobo* (pl. 48, *e;* Handbook vol. 3, pl. 52, *a;* figs. 73, *a–e*, *g*, *h;* 79; 86, *b*). Next most similar is the pottery of the *Arawakan Piro* (Handbook, vol. 3, figs. 73, *f;* 86, *a*), and then of the *Cocama*, a *Tupí* group at the mouth of the Ucayali; and after them, possibly, that of the *Quechua*-speaking *Aguano* and perhaps that of the *Chayawita* (Handbook, vol. 3, pl. 52, *b*, *f*). The interpretation of the style as an *Arawak* inheritance must accordingly be regarded with some reserve. If the *Arawak* did originate it—which is unproved—they imparted it to non-*Arawak*, and some *Arawak* failed to retain it. A straight geographical diffusion up the Amazon, without relevance to speech affiliation, would be a simpler hypothesis, were it not for the thoroughly distinct florid Santarém style halfway up the great river route.

In the Peruvian Montaña, this style is most successfully developed on pottery, as just said, among the *Panoan*-speaking *Shipibo*, *Conibo*, and *Panobo*. Whatever its ultimate origin, it seems to have taken a strong hold on all the art expressions of these tribes. At any

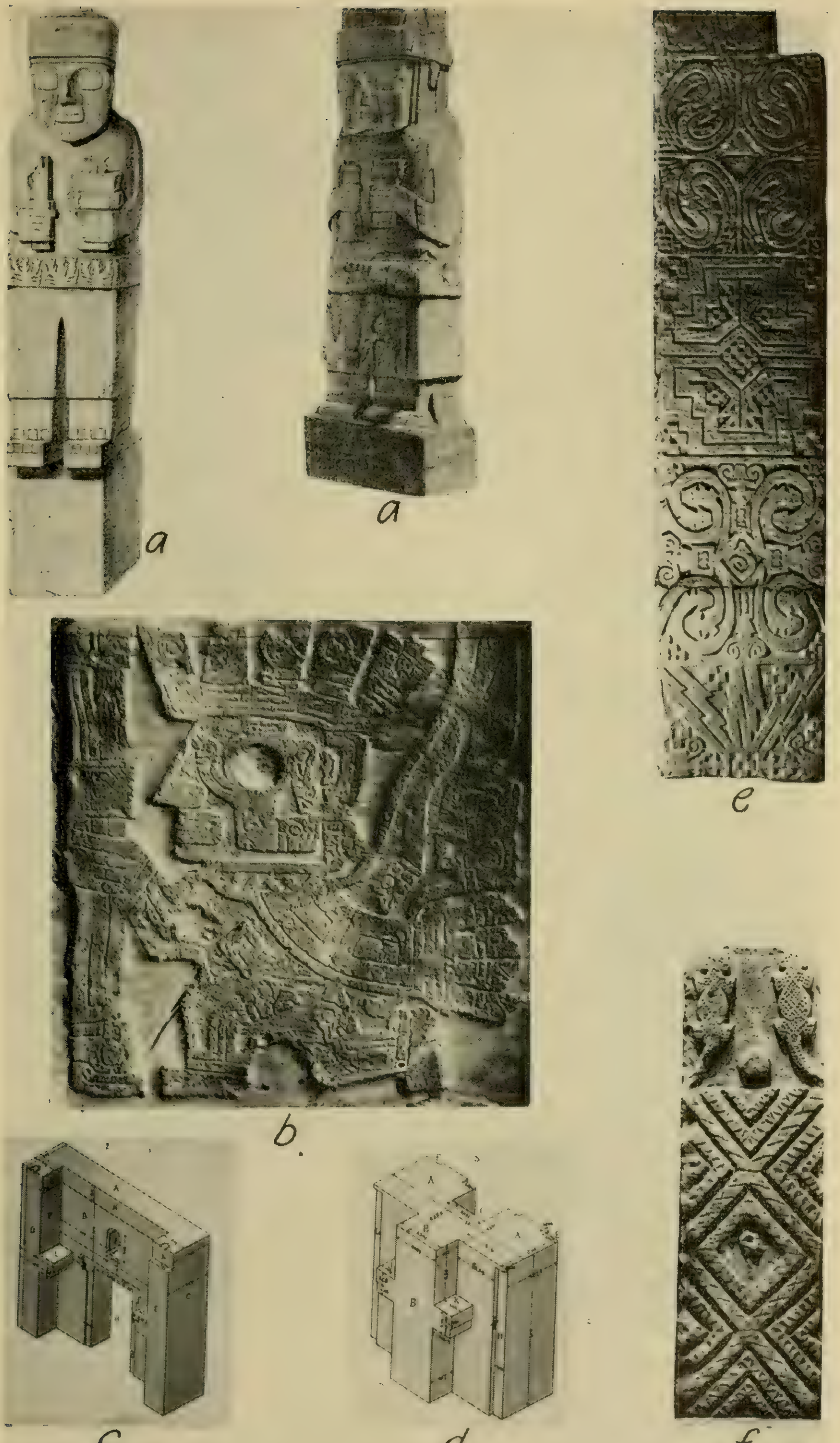

PLATE 41.—**Stone carving and cutting of the Titicaca Basin.** *a*, Statues of sandstone, Tiahuanaco; *b*, winged relief figures from monolithic gateway, Tiahuanaco; *c*, *d*, stereometric blocks, Tiahuanaco; *e*, *f*, geometric relief stelae from Anapa (*e*) and Hatuncolla (*f*). (After Stübel and Uhle, 1892, pls. 31, 11, 36; *e*, *f*, after Kidder II, 1943, pls. 6, 7.)

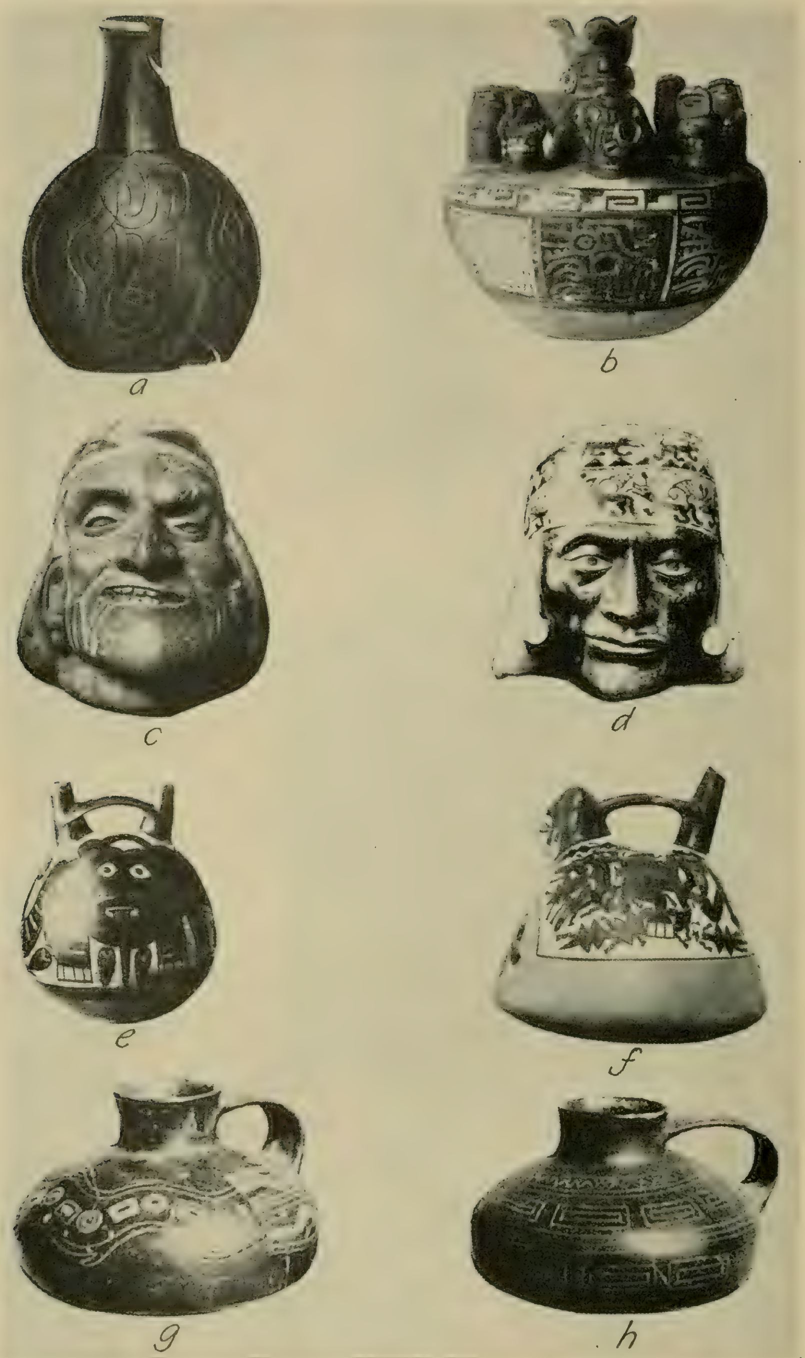

PLATE 42.—**Peruvian ceramic styles.** *a*, Chavín, from Chavín de Huántar; *b*, Recuay; *c*, *d*, Mochica; *e*, *f*, Nazca-A and Nazca-B; *g*, *h*, Paracas-Cavernas from Ocucaje. (*a*, After Tello, 1943, pl. 18; *b*, after Fuhrmann, 1922 a, p. 69; *c*, after Max Schmidt, 1929, p. 192; *e*, after Kroeber and Strong, 1924, pl. 25; *f*, after Gayton and Kroeber 1927, pl. 27; *g*, *h*, after Kroeber, 1944, pl. 13.)

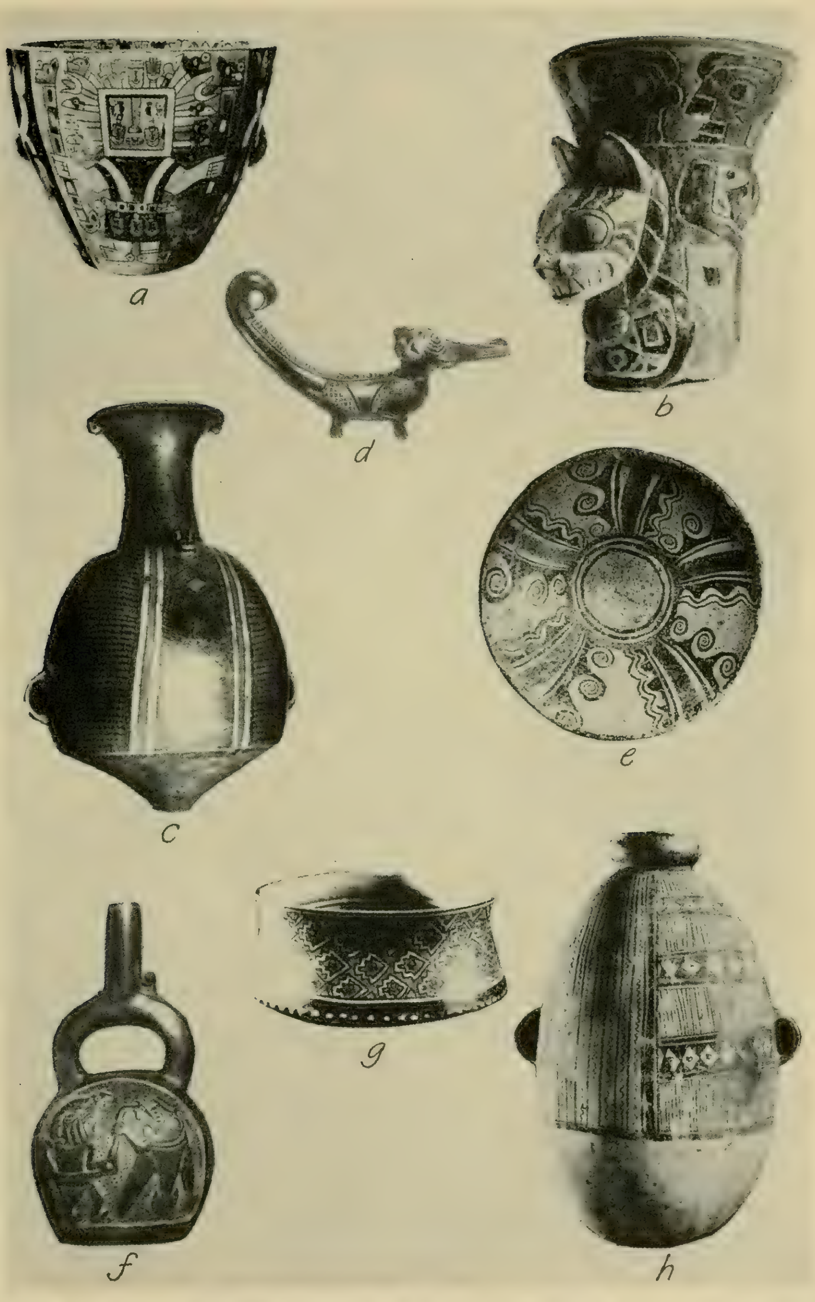

PLATE 43.—**Peruvian ceramic styles.** *a*, Tiahuanaco, from Pacheco, Nazca Valley; *b*, Pucara; *c*, *Inca*, from Cuzco; *d*, Apurimac; *e*, Cajamarca; *f*, Chimu; *g*, Ica; *h*, Chancay. (*a*, *b*, *g*, *h*, After Muelle and Blas, 1938, pls. 31, 71, 48, 50; *d*, *e*, after Kroeber, 1944, pls. 40, 35; *c*, Courtesy of University of California; *f*, after Fuhrmann, 1922 b, p. 78.)

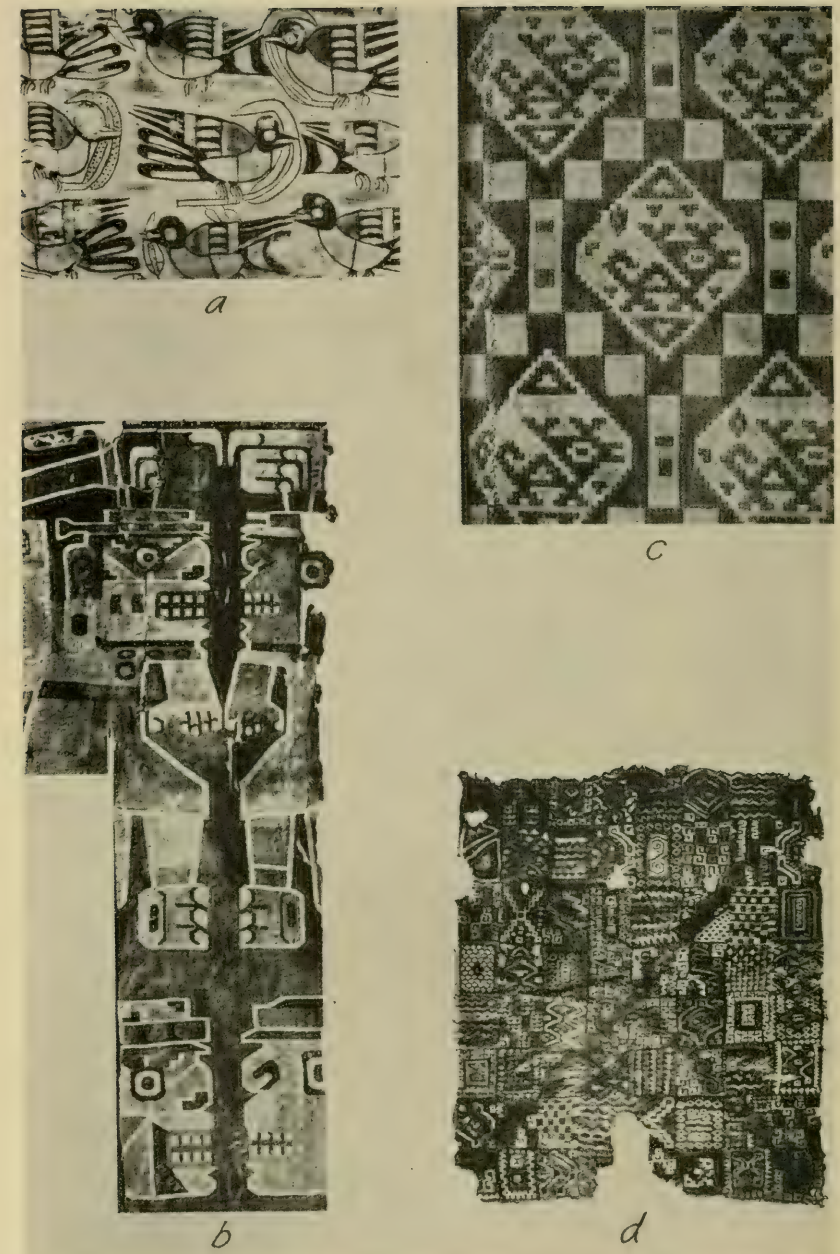

**Plate 44.—Peruvian textiles.** *a*, Nazca style, painted; *b*, Tiahuanacoid, from Ica; *c*, Late Coast, from Chincha; *d*, *Inca*, from Poroma, Nazca. (*a*, After O'Neale, 1937, p. 135; others, after O'Neale and Kroeber, 1930, pls. 12, 44, 34.)

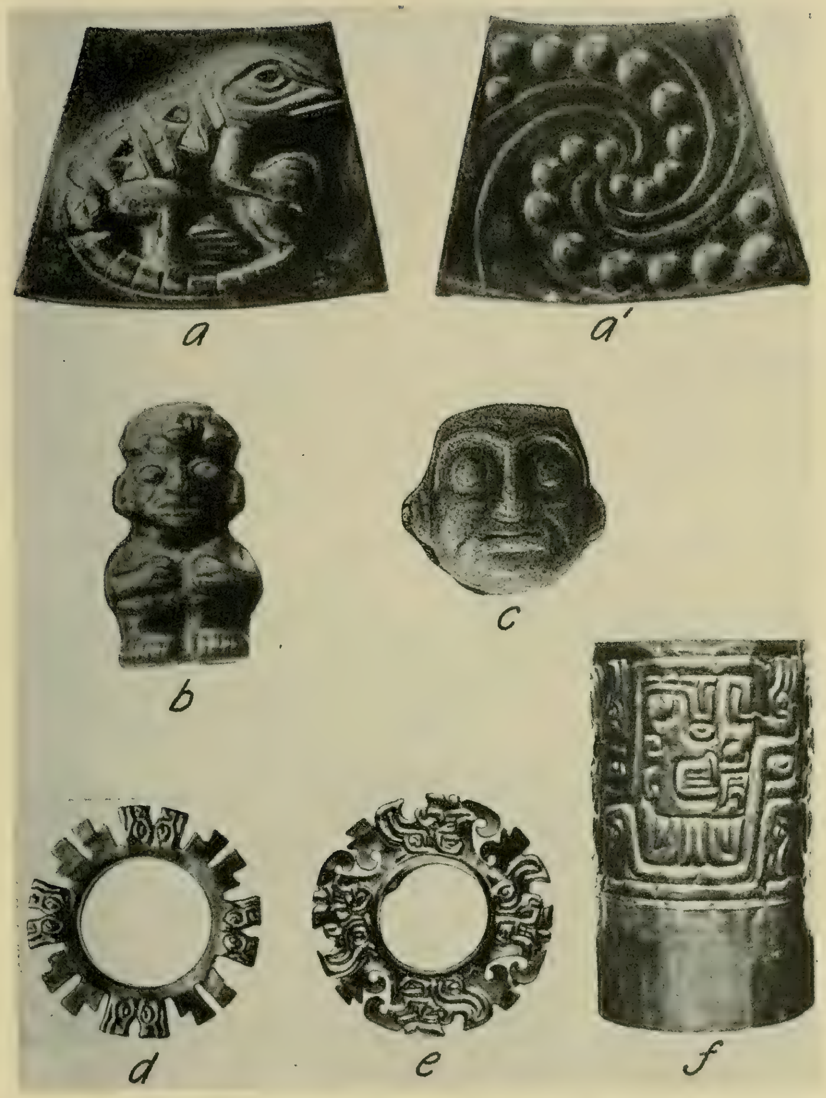

PLATE 45.—**North Peruvian metalwork.**—*a*, *a′*. Hollow gold ornament; *b*, hollow tumbaga figure; *c*, copper clapper. All Mochica from Moche. *d*, *e*, Gold earplug rims; *f*, gold crown. All Chavinoid from Chongoyape. (*a–c*, After Kroeber, 1944, pls. 44, 47; *d–f*, after Lothrop, 1941, pls. 17, 16.)

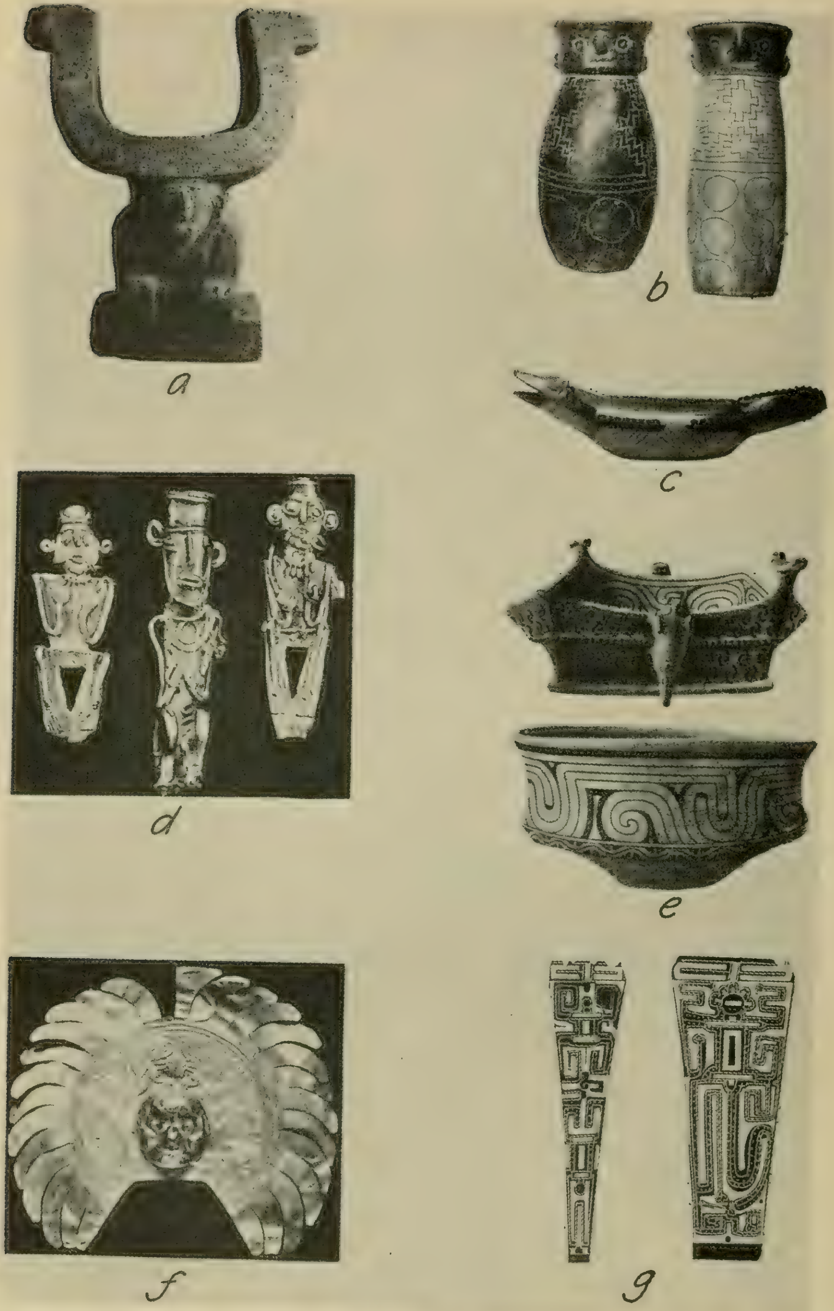

PLATE 46.—**Ecuador stone seat, jars, and gold; *Chibcha* gold; and Guiana pottery and clubs.** *a*, Stone seat, Manabí, Ecuador; *b*, jars, Azuay, Ecuador; *c*, pottery alligator, Surinam *Carib;* *d*, gold figures, *Chibcha*, Colombia; *e*, prehistoric bowls, Counany, Brazil-Guiana coast; *f*, gold breastplate, Tola Island, Esmeraldas, Ecuador; *g*, carved clubs, Guiana. (*a*, After Saville, 1907, pl. 6; *b*, after Verneau and Rivet, 1922, pl. 53; *c*, *e*, after Roth, 1924, pls. 22, 29; *d*, after Farabee, 1920, fig. 54; *f*, after Farabee, 1920, fig. 3; after Stolpe, 1927, pl. 10.)

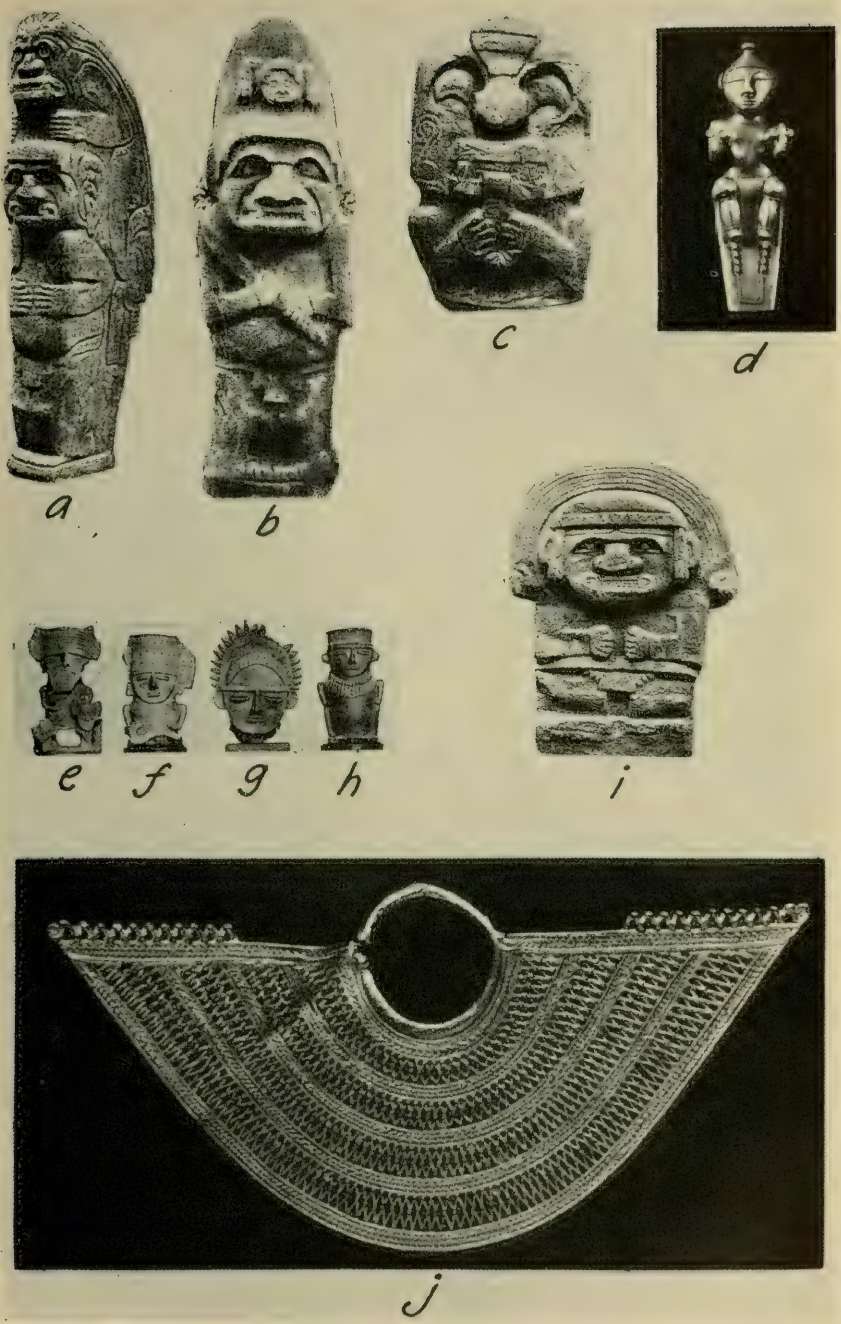

Plate 47.—**Colombia: Stone statues, goldwork, and ceramics.** *a–c*, *i*, Stone statues, San Agustín; *d*, gold figure, cast, *Quimbaya; e–h*, ceramics, *Chibcha:* *j*, gold filigree, cast, Antioquía. (*a–c*, *i*, After Preuss, 1931, pls. 27, 42, 75; *d*, *j*, after Farabee, 1920, p. 91 and fig. 67; *e–h*, after Seler, 1893, pl. 49.)

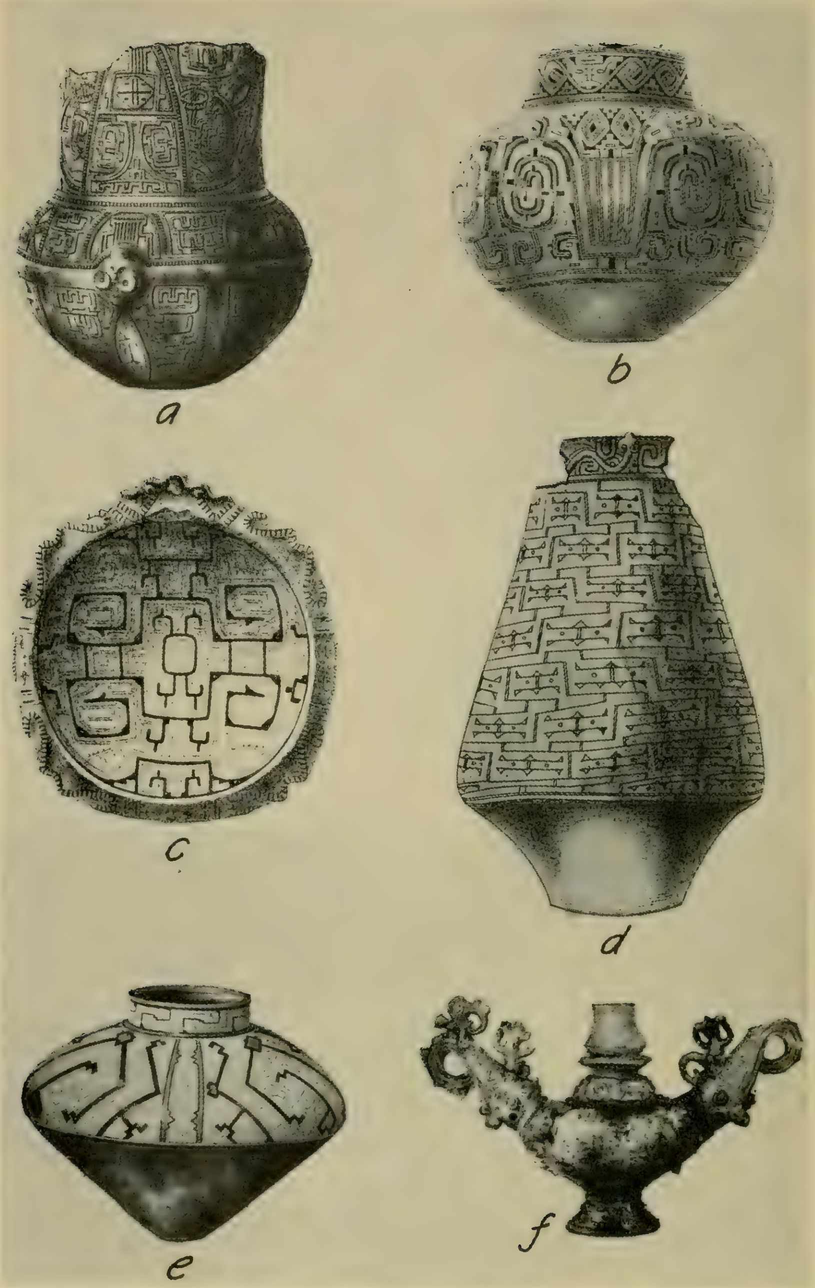

PLATE 48.—**Amazon pottery.** *a–d*, Prehistoric Marajó; *e*, modern Conibo, Perú; *f*, ancient Santarém, florid style. (*a–d*, After Netto, 1885, pls. 1, 2, 5; *e*, after Farabee, 1915, fig. 72; *f*, after Nordenskiöld, 1930 d, p. 24.)

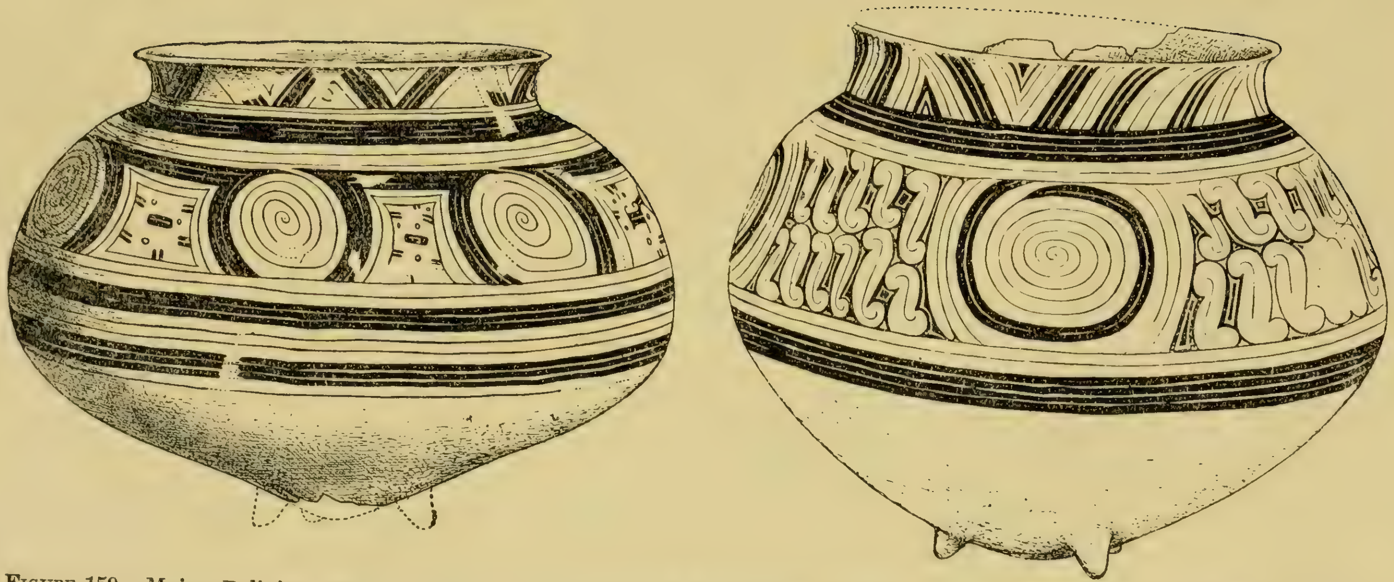

FIGURE 159.—Mojos, Bolivian lowland: burial urns; Hernmarck Mound, Late Period. (After Nordenskiöld, 1913, figs. 118, 122.)

rate, this is beyond doubt for the *Shipibo*. Compare the textile design, the paddle blades, and the face, hand, and foot painting of figures 82, 83, 84, in Volume 3 with the bowls in figures 73, *a*, *b*, *g*, *h*, of the same volume. The fidelity with which the motifs and patterning are retained on the different planes and textures is quite extraordinary.

In this tradition there must unquestionably also be reckoned two other Amazonian ceramic styles, both prehistoric and as yet represented by but few examples. These are Napo in the drainage of that interior Ecuadorian river, and Mirakanguéra from about the confluence of the Madeira with the Amazon. (See Howard, 1947, pl. 7.) Both styles skillfully utilize relief, incision, and polychrome painting in generic Marajó manner. Especially does the far-distant Napo style handle surface design with both intricacy and control.

Probable prehistoric affiliations with Marajó are further visible in Goeldi's discoveries from Cunany in Brazil near the French Guiana frontier (pl. 46, *e;* Handbook, vol. 3, pl. 15) and in occasional pottery from Surinam (pl. 46, *c*) ; also in Nordenskiöld's (1913) later-period burial jars from the Mojos area in lowland Bolivia (fig. 159). The former look like a provincial, considerably altered Marajó. The latter contain remote but perhaps acceptable Marajó reminiscences; Nordenskiöld considers them probably the work of *Arawak*.

While Marajó has to date yielded the fullest exemplification, there is of course no direct evidence that this island held the origin or constituted the historic center of this art. "Amazonian Ceramic Style" might therefore be a more appropriate designation for the total growth—certainly one relatively free of implicit special hypotheses.

## THE FLORID STYLE

On the lower Amazon, around Santarém, there is found a prehistoric pottery, attributed to the *Tapajó* nation, which is remarkable for the uncontrolled exuberance of its forms. It is an unpainted ware, which makes the most of bases, pedestals, handles, and lids, and proliferates further into a variety of excrescences and adornos in rococo wedding-cake manner. The execution is slovenly and inept; the style, both bad and overloaded (pl. 48, *f*; fig. 160; Handbook, vol. 3, pl. 12, *a*. *b*; fig. 17). Occasional traces of similar impulses are manifest in the Marajó wares from the mouth of the river, but are held in check there by a genuine sense of form which mostly succeeds in imposing some restraint of design.

A whole series of traits go into this florid Santarém style. Among them are: animal-head handles, human-head handles, caryatid figures, protuberant eyes, double effigies, hunchback effigies, fish figures; as regards vessel shape: long-necked bottles on flaring base, scalloped

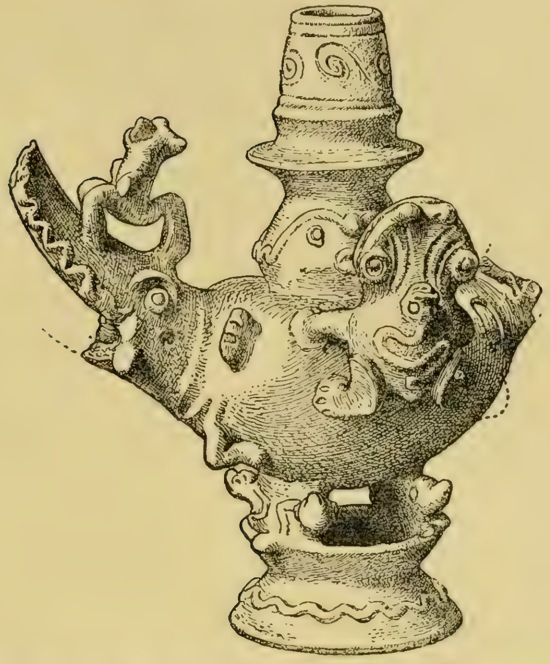

FIGURE 160.—Santarém, Brazil: Florid vase. (After Nordenskiöld, 1930 d, fig. 11.)

profiles, bulbous necks, four-lobed vessels, looped feet, perforated bases, flanges, multiple handles; and crescent-based figurines.

However, the unbridled Santarém ware is only an extreme exemplification of a tendency which appears to some degree also in much of the pottery of Guiana, Venezuela, the Antilles, and Florida; and again in Isthmian America. Clay was evidently too easy for the peoples here: it tempted their playfulness before they had achieved esthetic and kinesthetic control. In Venezuela, it is particularly the western coast that runs riot in this way. On the Amazon the florid style seems of local occurrence: Santarém is a puzzling pocket about half-way between Marajó and Mirakanguéra.

## THE INDIGENOUS ARTS OF NINETEENTH-CENTURY TRIBES

Iberian subjugation everywhere broke the integrating principle of native cultures; with this, their art collapsed. It is not merely a matter of religious art forms being destroyed by the impact of Christianity. Secular and domestic arts generally suffered equal degradation. For instance, in México, the crude or base Colonial wares of the 17th century replace the fine *Aztec* and *Mixtec* ceramics. Among the marginal Pueblos of New Mexico and Arizona, similar esthetic impoverishment is observable a century later. The same deterioration, or complete destruction, overtook practically all native arts in South America. Broadly, it was only among Indians remote enough to escape direct contact and subjugation—usually in the Tropical Forest—that humble decorative arts managed to develop or survive here and there among "wild" tribes until systematic ethnological inquiry began to be made in the later 19th century.

The best case of such preservation is the probable reappearance of certain strains of Marajó art in the paintings of modern pottery in the upper Amazon region, as just suggested (page 486). Next, in the Northwest Amazon area, an attractive style of painting survived into the 20th century on bowls and jars of *Arawakan* tribes, such as those of the Içana River, and the *Baniva;* of which the poorer style of the *Tucano* and *Desana* appears to be a crude reflex (Handbook, vol. 3, figs. 111, 112; further examples in Koch-Grünberg, 1909–10, 1923 a, and Roth, W. E., 1924, pl. 87). Modern work from the Maroni River *Carib* of Guiana seems related (pl. 46, *c*). This decoration rests upon light-line frets: in sequence, in juxaposition, and as rectangular spirals. The motifs may or may not be related historically to Marajó; they are at any rate incisively conceived and pleasingly executed. The vessel shapes are consistently simple—as they are also in the *Shipibo-Conibo-Panobo-Cocama-Piro* art, in contrast with the sometimes overornamental shapes of Marajó and Cunany.

Another style of modern ceramic painting occurs in the angle formed by the confluence of the Marañón and the Huallaga, among the *Aguano*, *Chayawita*, *Chébero*, and *Munichi.* This is conspicuously inferior in quality to the preceding. It is characterized by successions of zigzags or diamonds with tiny black rhomboids in or at their points (Handbook, vol. 3, pl. 52, *b*, *c*, *d*, *f*; and fig. 74). There is in this local manner a suggestion of a reminiscence of better antecedents; and as the heavy line with paralleling shadow line occurs, it is just possible that the connection may once more be with Marajó.

By contrast, the pottery decoration of the *Jívaro* and *Simaku* of the same Peruvian Montaña (Handbook, vol. 3, fig. 75) is nondescript, though whether it echoes Andean or Spanish influences, or a former indigenous style, is not clear.

A ceramic style which is certainly derivative in part is that of the *Tupian Chiriguano* (and *Arawakan Chané?*) at the eastern foot of the Bolivian Andes. Here the prevailing influence was from the west: Atacaman (Handbook, vol. 3, fig. 60), from which the S-scroll was selected as decorative prime motif; plus a dash of *Inca* design from the Northwest; as shown by Métraux (1930).

To the *Chiriguano*, also, are attributed wooden masks mostly cut merely into a plane face, with slits for eyes and mouth, and a billetlike nose; but occasionally with sweeping curves effectively characterizing a successfully monstrous set of features (Handbook, vol. 3, pl. 44).

Eastern neighbors of the *Chiriguano* are the *Arawakan Chané*, whose pyrographed gourds (Handbook, vol. 3, fig. 61) follow an ancient Andean technique, although the stylistic origin of the work is unknown.

In Guiana, genuinely excellent geometric design is carved on wooden clubs (pl. 46, *g*) which have been fully illustrated and discussed by Stolpe (1927).

Masks from a series of tribes on the upper Xingú were found by Von den Steinen to be crude, thatchlike affairs, with block nose and minute eyes, but with rather striking patterns of dark-centered lozenges painted on the cheeks (Handbook, vol. 3, fig. 42). This style of painting is intertribal in the region; as are pottery bowls with nubbins and projections molded into suggestions of heads, legs, and tails of birds, reptiles, or mammals (Handbook, vol. 3, fig. 36). Stylistically, this ware is rudimentary, but, like the masks, it seems to have contained childishly undeveloped esthetic possibilities, rather than being a decadent reflex of something more ambitious.

A specialty of the tribes between the Issa (Içа) and Yapura Rivers in the vicinity of long. 72°–73° W. is well stylized body painting. This is not like the *Shipibo* body painting mentioned on page 488, namely, a transfer from ceramic decoration, but is an independent art in its own right, separate from other activities by the same tribes. Compare for instance the esthetically wholly inept memorial statues of the *Witoto* (Handbook, vol. 3, pl. 83) with their paintings on the skin of living women (Handbook, vol. 3, pls. 86, 88). Besides the *Witoto* proper, this style is followed by the *Bora* (Handbook, vol. 3, pl. 85), and by the *Andoke* and *Okaina* (Whiffen, 1915, pls. 9, 21, 25, 40, 44). Boldly outlined and filled patterns, usually in two colors, surround the thighs and cover the buttocks with something of the effect of skin-tight shorts; and are then continued—or at least an outline is—on the front of the torso over breasts and stomach, like the two flaps of a jacket below bare shoulders. The design is striking and original in its adaptation to the form of the human body; it utilizes this for its own purposes, as it were, rather than being dependent on it. Men's body painting is similar but simpler, and is concentrated on the breast and stomach (Handbook, vol. 3, pl. 86, *top*); and face painting contrasts by being haphazard and smudgy (Handbook, vol. 3, pl. 87). That the full style exercised an appeal to the natives is evident from its having become locally international. Its successful evolution in a culture of otherwise most meager esthetic achievements is paralleled by an example in North America. There, a well-specialized manner of face painting prevalent among the *Yuman* tribes reaches its most complex, exact, and striking development among the *Seri*, who evince no other art expression whatever, while that of the *Yumans* is poor and limited.

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# PETROGLYPHS

By Irving Rouse

Rude linear designs engraved or painted on rocks are widely distributed in South America, where they are variously known as petroglyphs, pictographs, "letreiros," "pedras lavradas," "piedras escritas," "piedras garabateadas," "pintados," and "riscos." In scientific usage, there has been a tendency to restrict the use of the term "petroglyph" to the engravings and to call the paintings "pictographs," but this is not always done. In the present article, the two varieties will be termed engraved and painted petroglyphs.

Whether engraved or painted, the petroglyphs are ordinarily found upon large boulders or outcrops of rock. Some lie close to the sites of Indian villages; others do not. The engraved forms are most common in and along streams, frequently in the vicinity of rapids and falls, but they also occur in open fields, on cliffs, in caves, and in rock shelters. The painted petroglyphs appear more often in caves and rock shelters than in the open, probably because protection is needed for the preservation of the painted markings. Rarely, engraved or painted petroglyphs are found on human constructions, such as the slabs lining graves and temples in Colombia, the pillar stones of Northwest Argentina and Puerto Rico, and the slabs lining ball courts in Hispaniola and Puerto Rico. Even in such cases, however, the slabs themselves are natural in origin, for it is characteristic of petroglyphs that they are applied to the original surfaces of the rock.

Because of their smoothness, water-worn boulders seem to have presented the most satisfactory surfaces for petroglyphs. Vertical, inclined, and horizontal faces are used; some are inaccessible except from the water or by climbing steep cliffs. Most petroglyphs are small and not easily seen from a distance, but examples from the Guianas and from the Tarapacá district of Chile occupy entire cliffs or the slopes of hills, extending for more than 3 km., and are visible over long distances.

Engraved petroglyphs appear to have been produced either by pecking with a hammerstone or by cutting with a sharp stone knife. Ordinarily, these petroglyphs consist only of lines and dots, no more than 2 cm. to 5 cm. wide and 2 mm. to 20 mm. deep. In the more elaborate forms, however, whole surfaces are pecked or incised away.

Advantage is sometimes taken of the natural irregularities in the rock to give an impression of relief to these marks, but true carving in relief is rare. The marks are often difficult to see, unless distinguished from the surrounding surface by a difference in patination. Nevertheless, there seems to have been little tendency to accentuate the engraving with painting, as in some other continents.

The colors of the painted petroglyphs are generally red and white, more rarely black, blue, brown, cream, green, and gray. They are of both vegetable and mineral origin, and it has been suggested that they were mixed with fat before being applied with a brush or with the finger. One the whole, the painted petroglyphs are more elaborate than the engraved petroglyphs. They cover areas in addition to delineating lines and, perhaps because of the greater ease of their application, they tend to be more complicated in design.

The ordinary petroglyph is a small isolated figure, of which a number are applied to each rock. A lack of regard for the position of one petroglyph relative to the others is characteristic, and often the figures are crowded together, although rarely overlapping. This indicates that many figures, even on the same rock, have been drawn at different times and by different people; in some places it has been possible to set up local sequences of styles. The total effect is one of casual association of the figures, although some petroglyphs do occur in series and there are a few attempts to portray scenes.

The petroglyphs are about evenly divided between geometric and naturalistic forms. Among the former are many rectilinear figures, such as simple and concentric squares, rectangles, triangles, rhomboids, frets, and stepped bodies, many of which are filled in with dots, hatching, or cross hatching. Curvilinear figures include simple and concentric circles, hooks, spirals, and **S**-shaped forms. In addition, there are zig-zag, parallel, radiating, and undulating lines, as well as many figures which have no regular shapes but are interlaced in a haphazard fashion. The swastika has been reported from the Nariño district in Colombia, but does not seem to be present elsewhere.

The naturalistic forms include a good cross section of the modern fauna of South America: alligators, birds, centipedes, crabs, fish, foxes, frogs, guanacos, insects, jaguars, lizards, llamas, monkeys, ostriches, owls, snakes, pumas, and turtles. No extinct forms have yet been noted. Some of the llamas are shown carrying burdens, and there are also dogs, pigs, and horses with riders, which probably date from historic times. The flora is more poorly represented; trees and flowers are infrequently present. Human figures occur everywhere; they range from complete figures to outlines of faces, eyes, hands, and feet. The more elaborate forms show clothing, ornaments, weapons, and human-head trophies, as well as women with children. Whole scenes illustrating dances, warfare, captives, fortifications, and other parts of culture have been described from Northwest Argentina, but these seem to be unique. The more schematic figures were probably not intended to be as representative as this; many are highly conventionalized. The sun, moon, and stars are also common subjects for petroglyphs. There are few pictures of artifacts except in association with the human figures, but isolated vessels and clubs do occur. One well-known petroglyph from the Amazon Basin shows two European vessels under sail. Nor is there much similarity between the petroglyphs and the designs represented on pottery, gourds, and other artifacts. Such resemblances have been reported only from the Andean areas.

A number of Portuguese and Spanish names, signs of the cross, and other geometric figures have been reported from Brazil, Colombia, and the West Indies, and should probably also be classed as petroglyphs. They occur under the same circumstances as the aboriginal drawings, and are superior to them only in the presence of writing.

Some petroglyphs seem to have had a religious function, while others apparently served only for amusement. We are told that the *Taino* of the Greater Antilles worshiped rock engravings as representations of their deities, or zemis. Many of the relatively inaccessible human figures placed along streams and by waterfalls in other parts of South America are probably also symbolic of the spirits believed to reside in those places. Even today, it is difficult to persuade some native to approach the drawings. On the other hand, the Indians of the Guianas and the Chaco are reported to make petroglyphs to while away their time while resting during voyages. The modern Portuguese and Spanish petroglyphs are probably also for the most part pleasurable rather than sarced objects.

It does not seem likely that the petroglyphs had much esthetic significance, with the possible exception of those which copy designs on artifacts or are in cave dwellings. Neither does it appear probable that the drawings served as records, although the painted scenes in Northwest Argentina might have had that function. Some writers have professed to see traces of Hebraic or Phoenician writing in the petroglyphs of Brazil, Colombia, Venezuela, and the West Indies, but all such theories seem to be unfounded. Other writers have suggested that the few drawings of artifacts represent objects traded during commercial transactions, that some geometric signs are property marks, and that certain animal forms may be totemic.

Since the time of Boman (1908, 2:815–822), it has been customary to classify South American petroglyphs geographically into four groups: Patagonian, Ando-Peruvian, Colombian-Venezuelan, and Brazilian. A modified form of this classification will be used here.

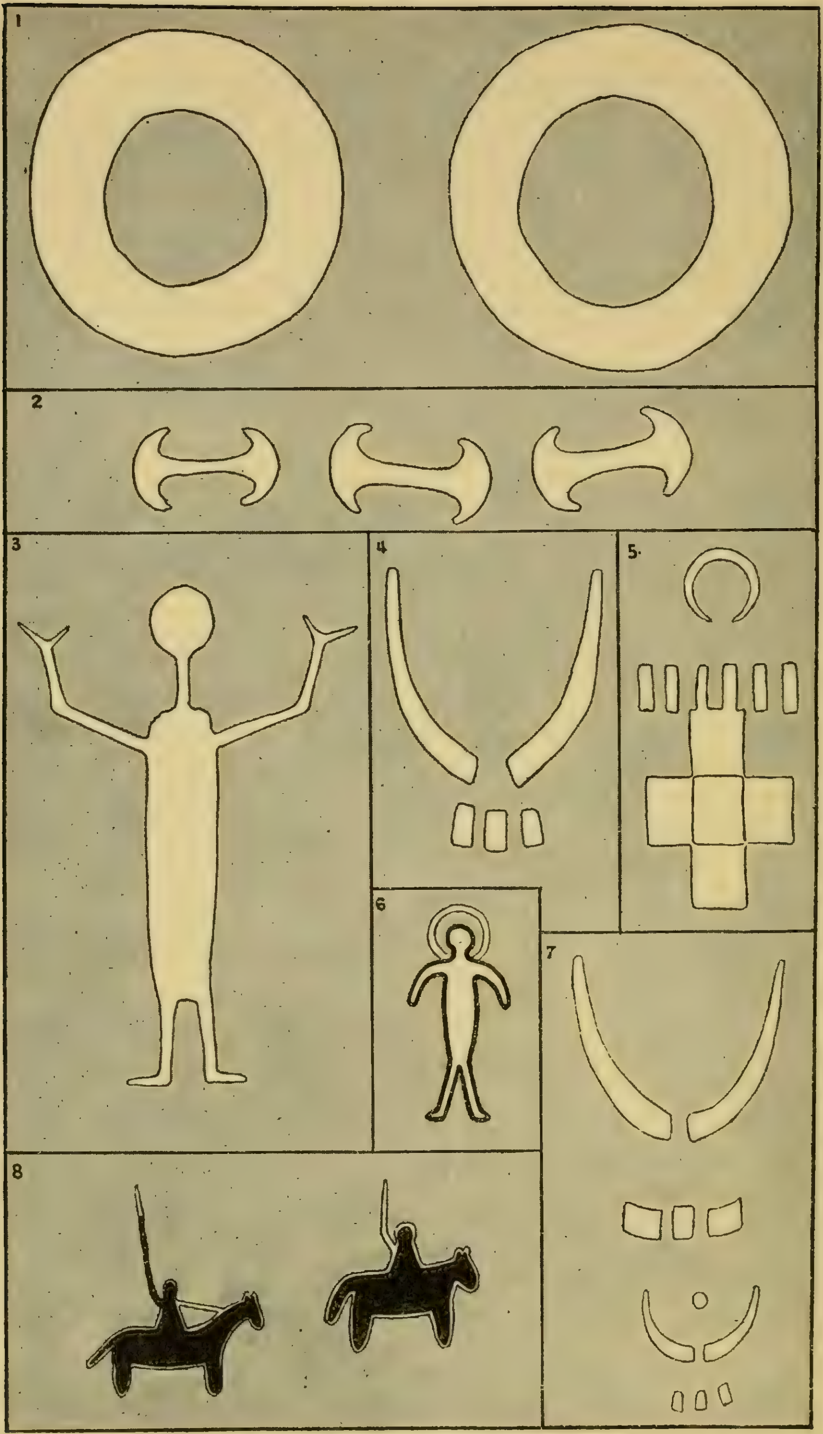

Figure 161.—Petroglyphs from the Quebrada de Humahuaca, Northwest Argentina. From the Grotto of Chulín. (After Boman, 1908, fig. 195.)

Patagonian petroglyphs (pl. 49, *top* and *center*) are found not only in that area but also in Tierra del Fuego and possibly in south Central Chile as well. Occurring in caves and in rock shelters, they are predominately painted or engraved before painting. They consist of gross figures irregularly distributed over the rocks and representing largely the footprints of birds, animals, and human beings. Concentric circles, squares, outlines of human hands, and simple sketches of human beings are also present. It has not yet been possible to determine the chronological position of these forms; all of them seem to be prehistoric except for two representations of the hoof-marks of horses.

Ando-Peruvian petroglyphs are distributed throughout the Southern and Central Andes in Northwest Argentina (pls. 49, *bottom;* 50; figs. 161, 162), North Chile, Bolivia, and Perú. They occur in the open as well as in caves and rock shelters, and are either engraved or painted but rarely executed in both techniques. The designs are the most complicated in South America; some are realistic while others appear to be highly conventionalized. Figures occurring singly as in the other areas, are common, but many of the designs portray scenes and a few are presented in perspective. Pictures of birds, animals, and human beings are characteristic, the llama being the most common. Geometric designs are in the minority; some of them tend to resemble the designs on pottery and on other artifacts.

The Ando-Peruvian petroglyphs vary considerably from place to place. Pictures of the llama are most common in the central part of the area. As one moves north into Perú, feline figures become more important; to the south, the typical design is an entanglement of irregular curved lines. Most of the drawings of scenes are in Northwest Argentina, while North Chile is characterized by enormous petroglyphs, which are often traced in the desert sands rather than on rocks, or by planting stones in the ground.

Latcham (1938, pp. 350–365) has set up a hypothetical sequence of styles of petroglyphs for North Chile, which apparently has no basis in fact. He believes that the earliest petroglyphs were composed entirely of rectilinear geometric motives, with the exception of the circle. He postulates a later period of Chincha influences, marked by the introduction of meandering lines, hooks, spirals, concentric circles, rhomboids, stepped figures, and pictures of men and animals, all of which, according to him, are motives found on *Chincha-Atacameño* gourds and pottery. A subsequent group of petroglyphs are said to show *Inca* influences and still others are believed to be post-Spanish. Uhle (1924, p. 92) could find no traces of *Inca* influence among the petroglyphs of the Chincha valley in Southern Perú. The extension into Spanish times, however, has been verified by the discovery of

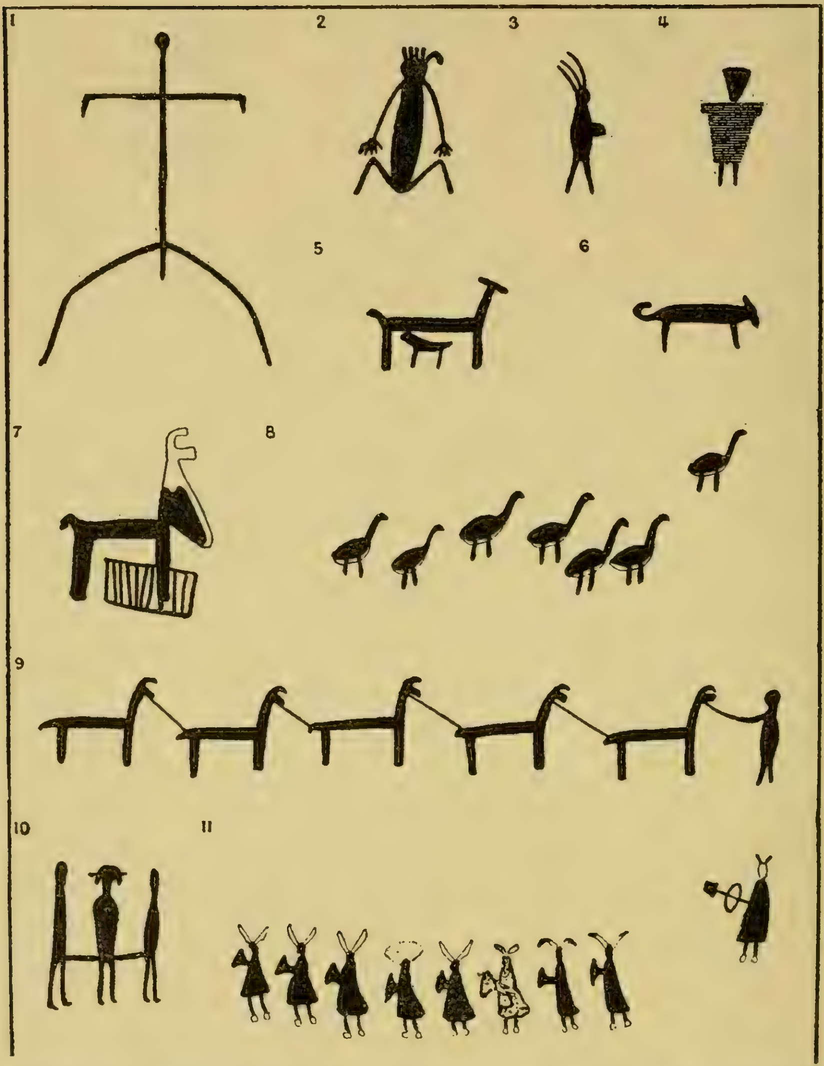

FIGURE 162.—Petroglyphs from the Quebrada de Humahuaca, Northwest Argentina. From the Grotto of Chulín. (After Boman, 1908, fig. 194.)

pictures of riders on horseback in Northwest Argentina (Gardner, 1931, pp. 128–131).

Petroglyphs of the Colombian-Venezuelan group (pls. 51; 52, *top*) are largely restricted to the Andean sections of those countries. Rough paintings and engravings are present in the open and in caves and rock shelters. The figures of human beings and animals are common, but they never show the details of clothing and ornament characteristic of the Ando-Peruvian area, nor are they used to portray scenes.

A typical practice is to draw a geometric outline and fill it in with other lines; these are commonly rectilinear.

Pérez de Barradas (1941) has distinguished eight zones among the petroglyphs of Colombia. To the south, in the department of Nariño, only engravings are mentioned; these comprise mainly human and animal figures located on rocks and in caves. In the San Agustín region, engraved petroglyphs are located on the slabs lining megalithic temples and tombs, as well as on natural rocks. Geometric figures are more common than pictures of animals and human beings; the spiral is notable for its absence. Modern Spanish petroglyphs have also been reported from this area. Both rock paintings and engravings occur in the valley of Cauca and the Tierradentro region. They have been found on boulders and on the steep slopes of rock and comprise mainly human and animal forms. Rock paintings and engravings are also known from boulders and rock shelters in the northern part of the department of Huíla, where geometric figures and pictures of human beings are said to have a certain resemblance to *Chibcha* goldwork. The plateau of Boyaca and Cundinamarca farther north contains engraved boulder markings of geometric and human figures, some of them with recognizable sex organs. In the Sierra Nevada de Santa Marta, engraved petroglyphs occur on boulders and on figure stones. They consist of animal as well as human figures. The eastern slopes of the Andes, finally, have yielded engravings like those of the Amazon Basin, in which human faces and possibly supernatural beings are emphasized. No attempt has yet been made to work out the chronological implications of these regional styles.

The petroglyphs of Brazil (figs. 163, 164) and the surrounding lowlands are too poorly known for adequate characterization, and it may eventually be possible to group them with the Colombian-Venezuelan forms. There seem to be centers of concentration near the headwaters of the various tributaries of the Amazon, in the region around Pernambuco and Natal in Brazil, in the Guianas, and in the West Indies (Costa, 1934, pp. 122–123); these may be correlated with the availability of rocks. The petroglyphs occur both in the open, in rock shelters, and at the mouths of caves. Engraving is more common in the northern part of the area and painting in the south. Pictures of fish, animals, and human beings seem to be characteristic; they are drawn in a schematic fashion which contrasts with the detail of the Highlands. Such designs are often presented only in part, in the form of faces or of faces and bodies. Simple geometric figures, such as the circle and the spiral, are also common.

The chronological position of the lowland group of petroglyphs is known only for Puerto Rico (fig. 165) in the West Indies (pl. 52, *bottom*), where they are limited to the last two prehistoric periods,

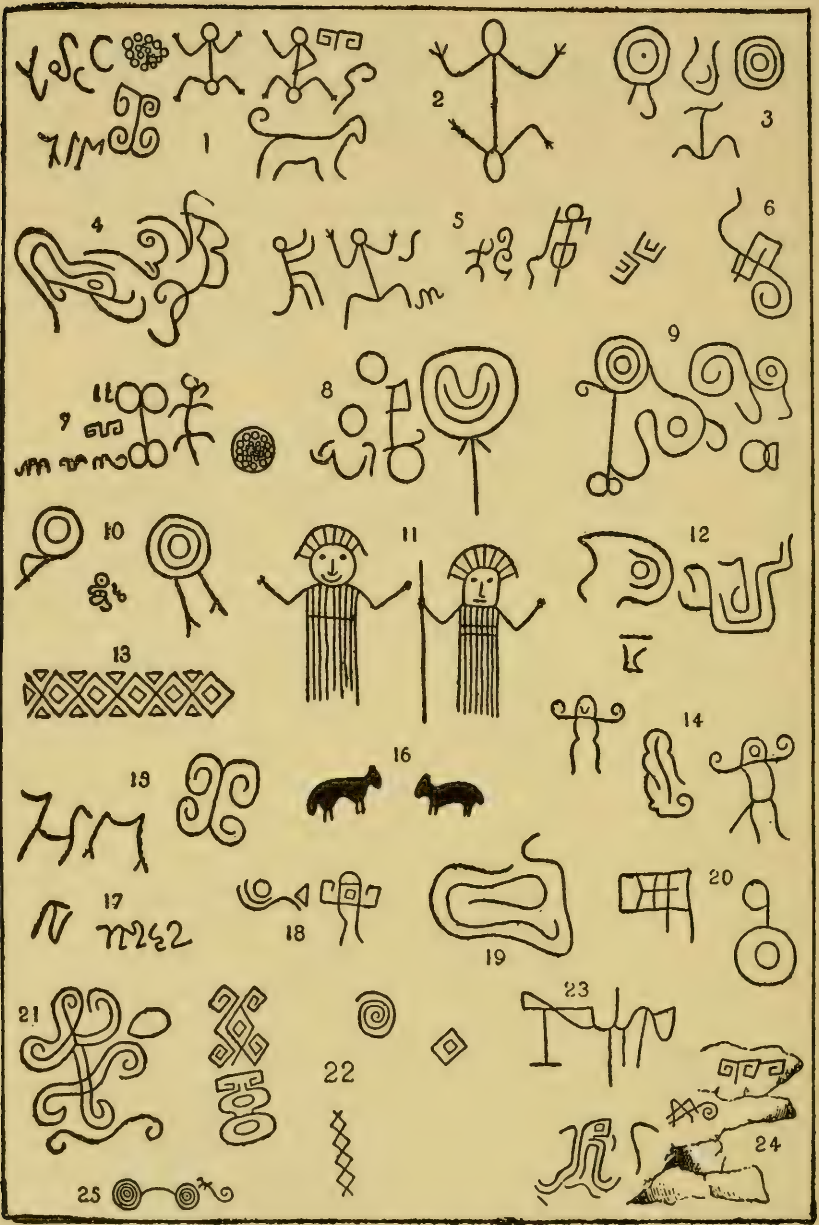
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Figure 163.—Brazilian petroglyphs. Valley of the Rio Negro. (After Mattos, 1938, fig. 29.)

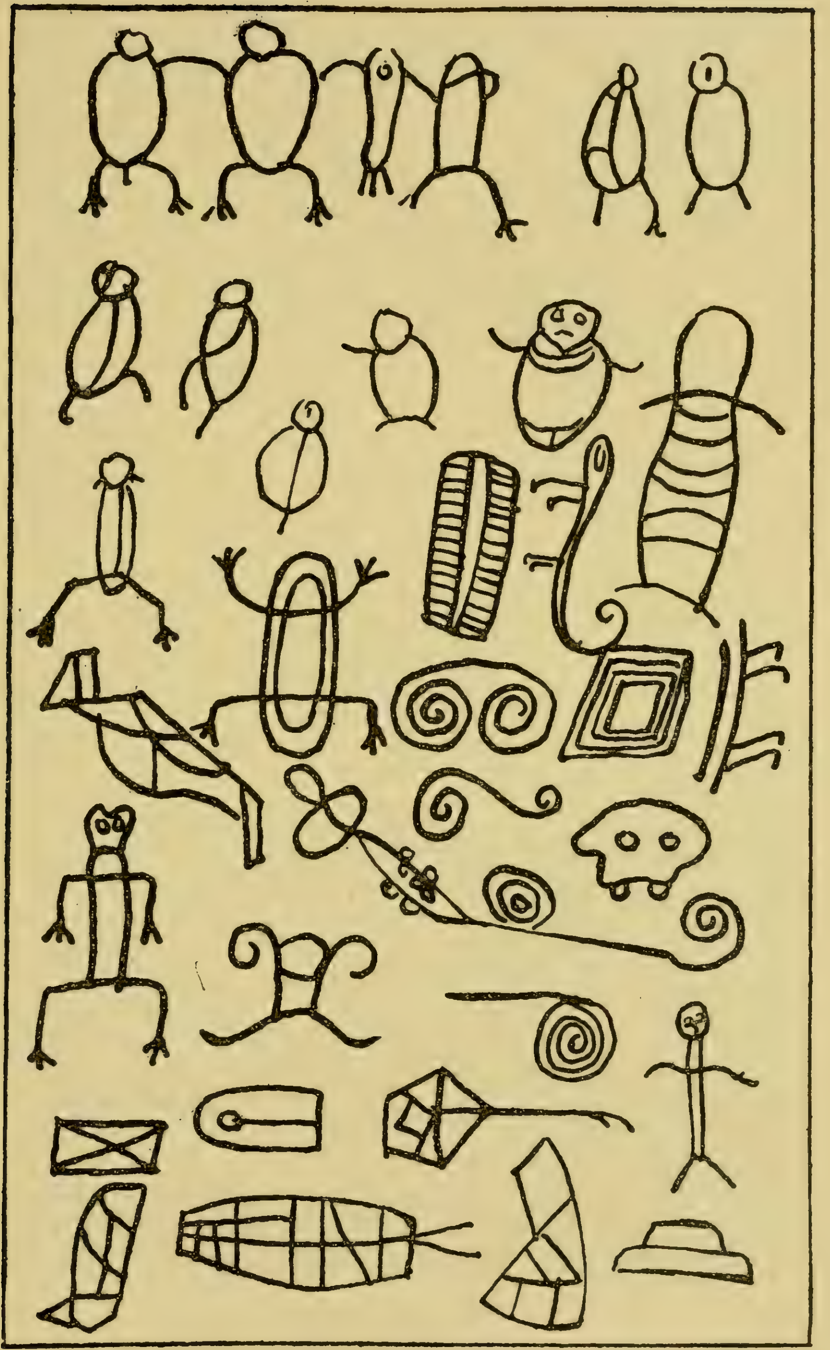

FIGURE 164.—Brazilian petroglyphs. Rio Maupes. (After Mattos, 1938, fig. 40.)

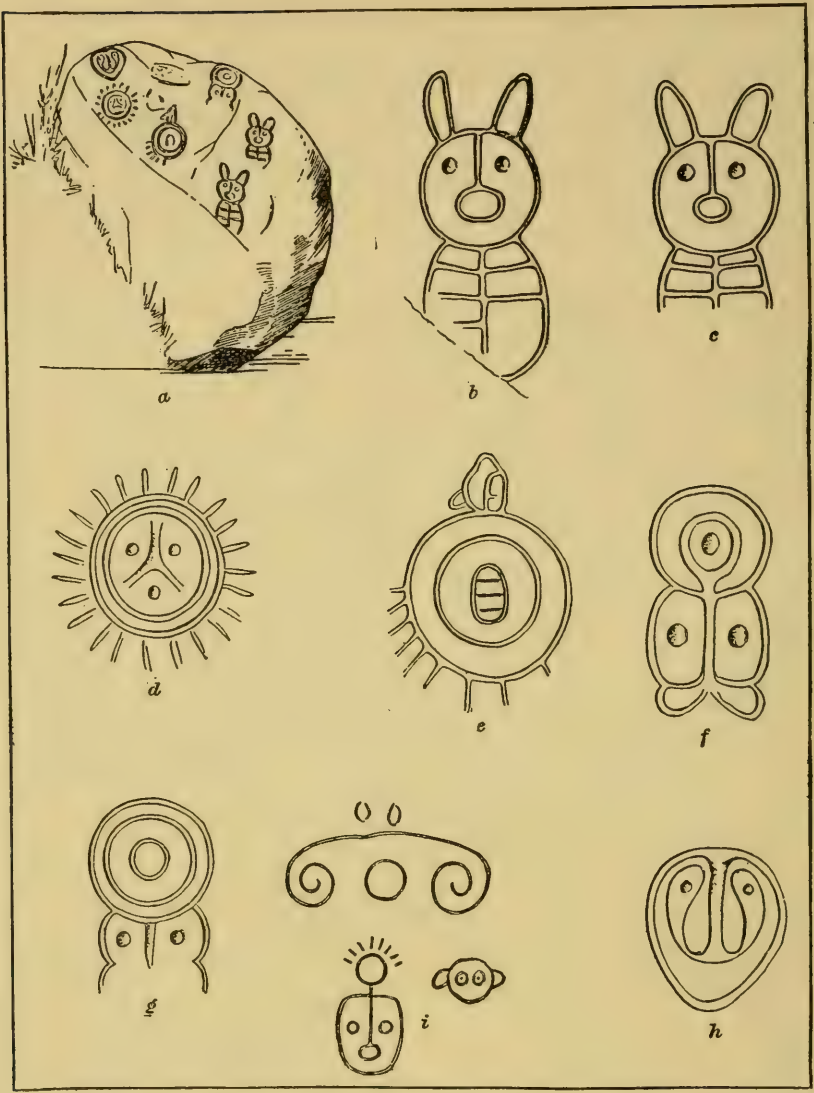

Figure 165.—Puerto Rican petroglyphs. (After Fewkes, 1907, pl. 60.)

III and IV (Rouse, 1949). A group of cave paintings in Cuba may be earlier, however, for they are associated with a preceramic culture (Herrera Fritot, 1939). On the mainland, the petroglyphs extend past the time of historic contact, and, in fact, are still being made today.

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Boman, 1908; Bruch, 1902; Costa, 1934; Fewkes, 1907; Gardner, 1931; Herrera Fritot, 1939; Koch-Grünberg, 1907; Latcham, 1938; Mattos, 1938; Pérez de Barradas, 1941; Requena, 1932; Rouse, 1949; Uhle, 1924; Vignati, 1934.

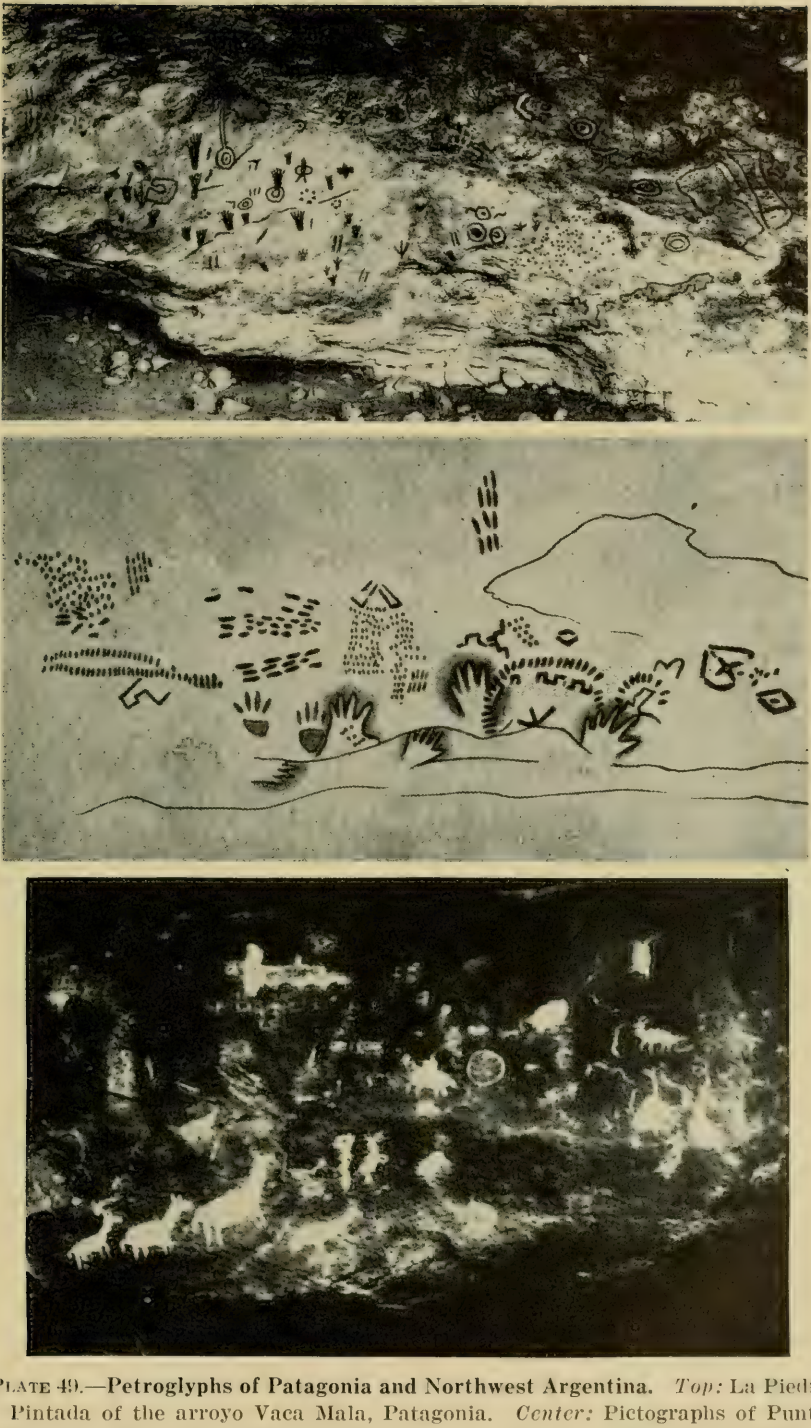


PLATE 49.—**Petroglyphs of Patagonia and Northwest Argentina.** *Top:* La Piedra Pintada of the arroyo Vaca Mala, Patagonia. *Center:* Pictographs of Punta Gualichu, Patagonia. *Bottom:* Figures on wall of interior of rock shelter, Group I, Casa del Sol, Northwest Argentina. (After Bruch, 1902, pl. 2; Vignati, 1934, pl. 47; and Gardner, 1931, pl. 7.)

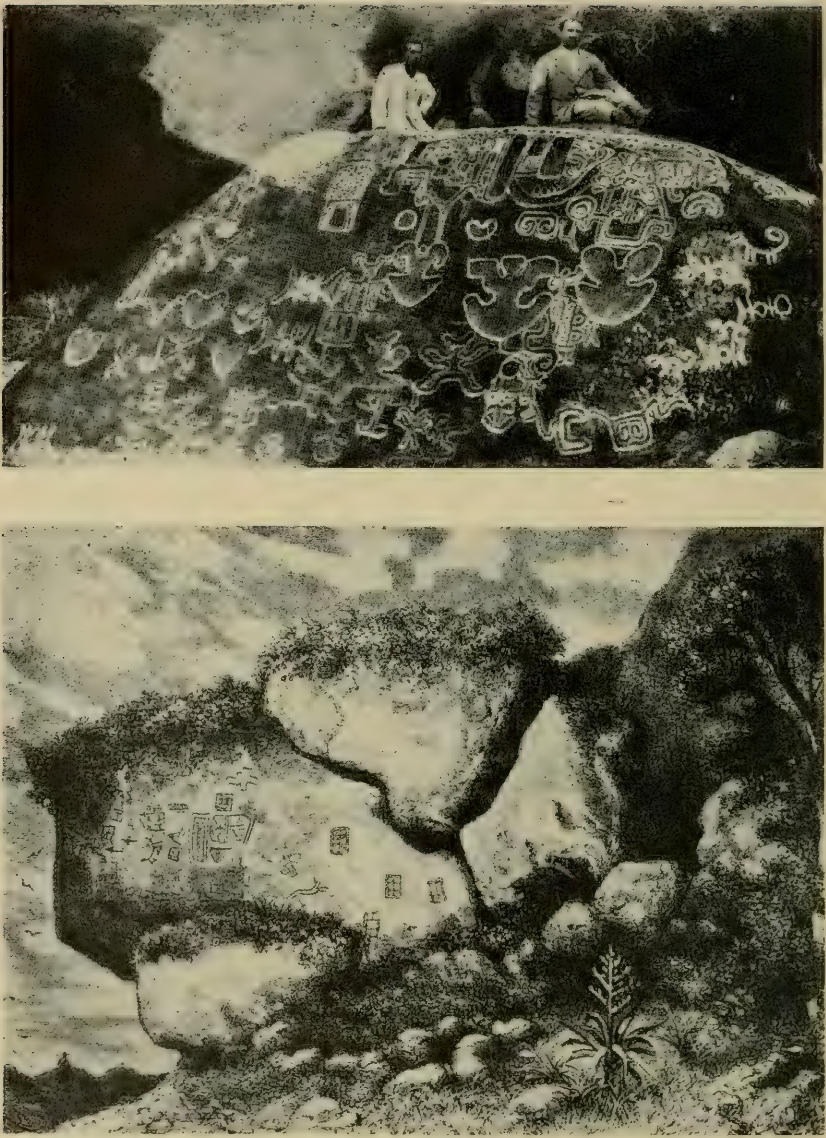


Plate 50.—**Petroglyphs of Cerro Colorado, Northwest Argentina.** (After Gardner, 1931, pls. 30, 44.)

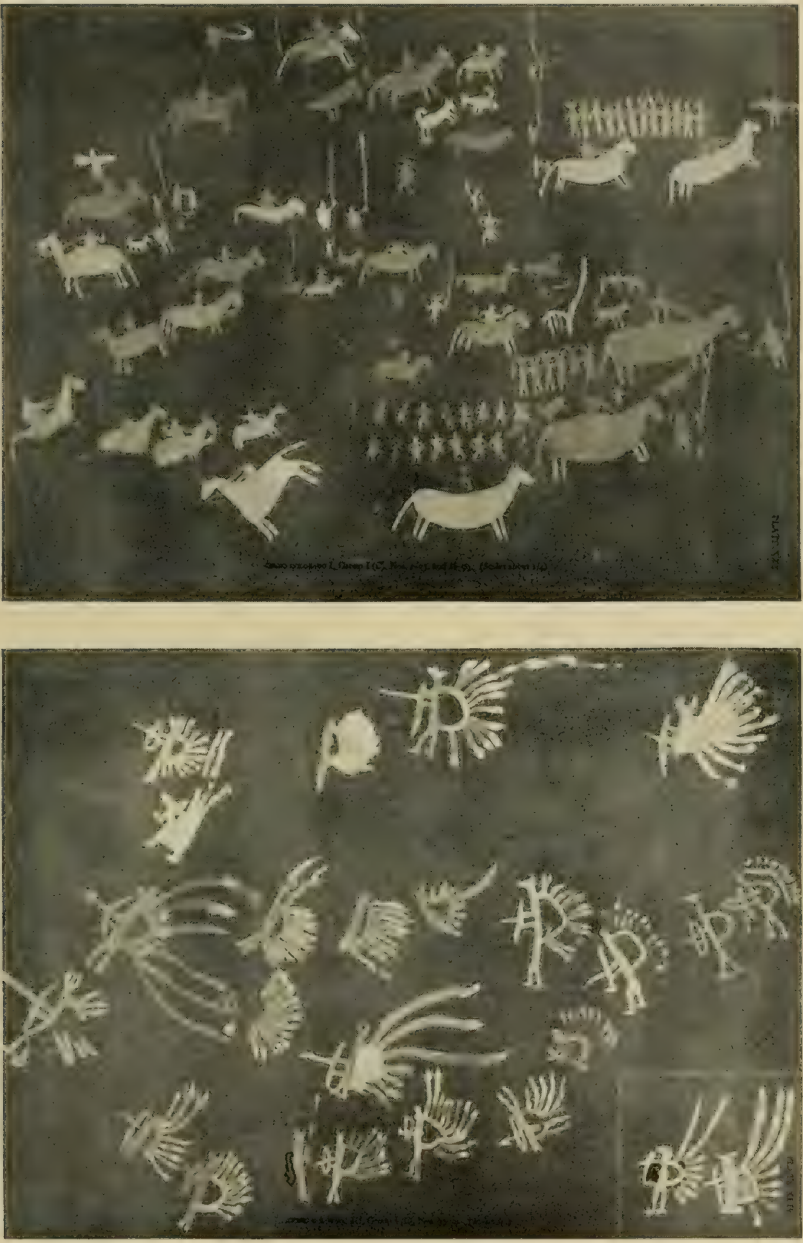
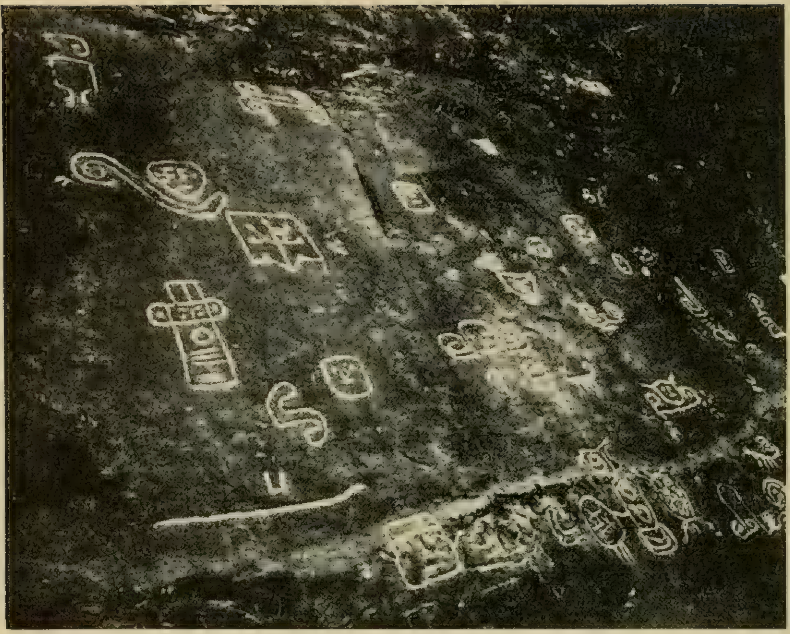


PLATE 51.—**Petroglyphs of Colombia.** (After Pérez de Barradas, 1941, pls. 16, 13.)



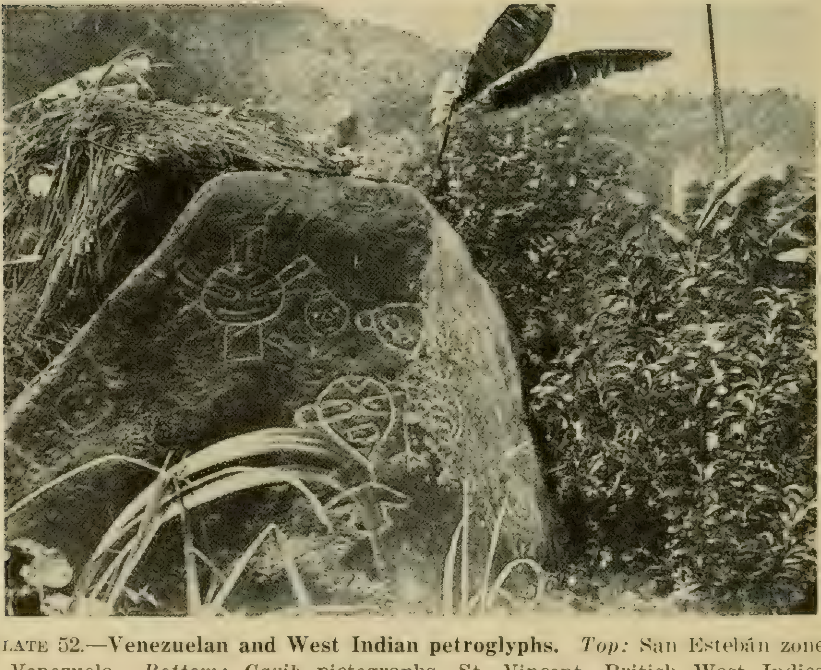


PLATE 52.—**Venezuelan and West Indian petroglyphs.** *Top:* San Estebán zone, Venezuela. *Bottom: Carib* pictographs, St. Vincent, British West Indies. (After Requena, 1932, p. 263; and Fewkes, 1907, pl. 62.)

# GAMES AND GAMBLING

By John M. Cooper

Dancing, singing, feasting, and, in the distribution area of alcoholic beverages, drinking sprees are probably, all things considered, the favorite recreational activities of the Indians of southern Middle America, the West Indies, and South America. The present article is concerned with recreational activities other than these—with games, sports, and kindred amusements.

For convenience of reference we are using the following areal terms: Middle American (Honduras to Panamá, including the *Cuna*), Antillean (West Indies), Andean (Highlands and adjacent west coast from northern Colombia to Middle Chile), *Araucanian* (including Chiloé and *Araucanian* territory east of Andes), Orinocoan (especially territory watered by left affluents of the Orinoco), Amazonian (watershed of Amazon west of mouth of the Río Negro to the north and of the Xingú River to the south, and including the Montaña), Guiana (Guianas to Amazon), Eastern Brazilian (area south of the Amazon and east of the Xingú and the Paraguay Rivers, down to about latitude 30° S.), Eastern Bolivian (Bolivia and immediately adjacent area, east of the *Aymara-Quechua* region), Chacoan (including also the *Chiriguano* and *Chané*), Pampean (Uruguayan and Argentine plains, south to Río Negro), Patagonian (Río Negro to Strait of Magellan), Fuegian (*Ona*, *Yahgan*, *Alacaluf*).

Field data on games are very imperfect and spotty. We have what appears to be full or fairly full information for the following areas: The Guianan (esp. Roth, W. E., 1924); parts of the Amazonian (esp. Karsten, 1930, 1935; and Koch-Grünberg, 1909–10); Chacoan and parts of Eastern Bolivian (esp. Nordenskiöld, 1910, 1919 a, 1920, and Karsten, 1930, 1932); *Araucanian* (esp. Manquilef, 1914); Fuegian (Gusinde, 1931, 1937). As regards the Middle American, Antillean and Andean areas, our data are relatively scant. The bulk of our information on games comes from the great forest and savanna region to the north—especially the Amazonian, Guianan, Eastern Brazilian, Eastern Bolivian, and Chacoan—and from the *Araucanian* and Fuegian areas to the south.

Our chief distributional studies are those of Nordenskiöld (esp. 1919 a, 1920).

We shall deal first with nongambling games and amusements, and afterward with gambling ones.

### NONGAMBLING GAMES AND AMUSEMENTS

We shall take up in order games and amusements distributed (1) very generally over most or all of the continent and adjacent islands, (2) widely within two or more areas therein, and (3) locally within quite limited ranges. In view of the many lacunae in our earlier and later sources, lines between these three divisions have to be drawn somewhat loosely. Moreover, the writer can at best hope to block out the broad outline of the continental picture as a working basis for later completion and emendation as further data are salvaged from the field or gleaned from our endless scattered literature.

**Continental and near-continental distributions.**—Games of ball are the only games that are specifically recorded as played within each of the 13 areas listed above. The balls are more commonly of maize leaves or rubber, sometimes of stuffed hide or other material. The games vary from the simple throwing or volleying of the ball from player to player, as among the Fuegians, or the kicking of a football, as among the Pampean women, to the elaborate organized hockey and pillma games and the rubber-ball games with or without a court proper. The more important and distinctive of these will be dealt with presently.

Specifically recorded as distributed over many or a majority of the 13 areas, including the Andean and the Fuegian, are wrestling and racing, and the use of dolls. In wrestling, various holds are customary, such as: hair (*Araucanian*), upper arm (*Island Carib*), neck (*Tapirapé*). In some areas, as the Andean (*Aymara*) and Guianan, team wrestling occurs, the *Aymara* teams representing moieties. Racing may be on foot, on horseback, or on water. Dolls are made of wood, clay, wax, gum, bone, straw, or other material. Probably general, widely recorded types of recreation, such as imitative or prevocational play with bows and arrows, slings, bolas, and so forth, and perhaps some specific types recorded from marginal as well as central areas, such as hide-and-seek (*Ona*, *Araucanian*, *Guaraní*, Guiana, *Mosquito-Sumo*) and "jaguar" (fig. 166) (*Mosquito-Sumo*, *Macushí*, *Taulipáng*, Chacoan—also not uncommon in North America), will be found near-continentally distributed when all the field data are in. The "jaguar" game, known under other names also, and nearly identical with our playground fox-and-geese, is a children's game, in which a group line up in a row, headed by a leader; another player, the

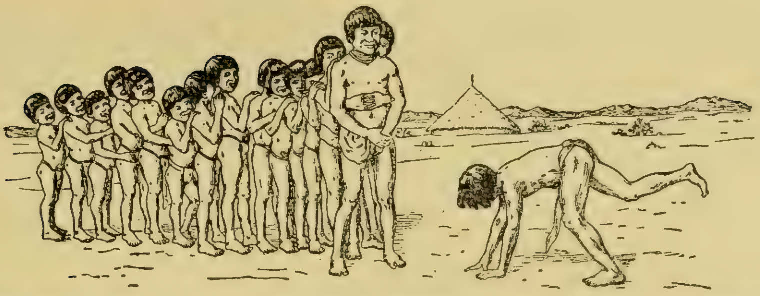


FIGURE 166.—Jaguar game, *Taulipáng, Macushi.* The boy hopping on his hands and one foot is the "jaguar." His raised right leg represents the jaguar's tail. (After Koch-Grünberg, 1917–28, vol. 3, fig. 10.)

"jaguar," endeavors to seize or tag the last child of the line, while the group and its leader try to ward him off.

**Games of more limited distribution.**—A good many games have wide distribution in two or more of our 13 areas, but are conspicuously absent from a number of them, particularly from the Andean, Pampean, Patagonian, and Fuegian.

The Andean area, apart from dice games to be dealt with later, and the Pampean, Patagonian, and Fuegian areas appear from our sources to have relatively meager game complexes and to lack a number of games, amusements, and toys that are of widespread distribution on the rest of the continent. The well-studied Fuegian area evidently has a very simple recreative culture; and seemingly so too have or had the Pampean and Patagonian, especially if we strip off the games and amusements derived after the beginning of the 18th century from *Araucanian* and Spanish sources—pillma ball game and hockey, playing cards, and horse racing. Whether the meagerness in the recorded game complex of the Andean area is due to lacunae in our earlier and more recent studies or to actual meagerness is not so clear; the latter explanation seems to be the slightly more probable one.

Of wide or fairly wide distribution east of the Andes and north of the Pampean area are ball games with the use of rubber or maize-leaf balls, hockey, hoop-and-pole, stilts, log race, snow-snake, ring-and-pin, cat's cradles, tops, bullroarers, buzzers, corncob darts, and bean shooters. Lacking in or at least unreported for the Pampean, Patagonian, and Fuegian areas are all of these; unreported for the Andean, all except cat's cradles, tops, and bull-roarers (bull-roarers reported for *Chocó* and *Aymara*); unreported for the *Araucanian*, all except tops, stilts, and hockey.

Ball games with the use of solid or hollow rubber balls are, or were earlier, found in the Middle American, Antillean (rubberlike ball of tree gum), Orinocoan, Amazonian, Guianan, Eastern Brazilian, Eastern Bolivian, and Chacoan (*Chané*) areas. The games with rubber balls are more commonly team games played by youths or adult men between tribes, villages, or other units. In the majority of tribes the ball is propelled toward the goals at either end of the playing field by the player's head, shoulder, knee, or part of the body other than the hands and feet; in a minority, as among the *Witoto*, *Macushí*, *Patamona*, *Sherente*, and *Mojo*, by the feet and/or hands. Among the *Apinayé*, the rubber ball is batted with flat and cylindrical battledores; among the earlier *Otomac* the women struck at it with straight thick-ended clubs. Sunken ball courts with walls of stone slabs were used in Porto Rico and Santo Domingo, but stone courts are not reported anywhere on the continent south of Middle America. Betting accompanied the game among the *Taino* of Hispaniola and the *Otomac* of the Orinoco.

Ball play with balls or "shuttlecocks" made of maize leaves (fig. 167) is very widespread in the Amazonian, Orinocoan, Guianan, Eastern Bolivian, Eastern Brazilian, and Chacoan areas. These balls are usually volleyed with the palm of the hand or else thrown.

Hockey, played with sticks curved at the distal end (fig. 168), and with balls usually of wood, sometimes of plaited rope, or of stone, may

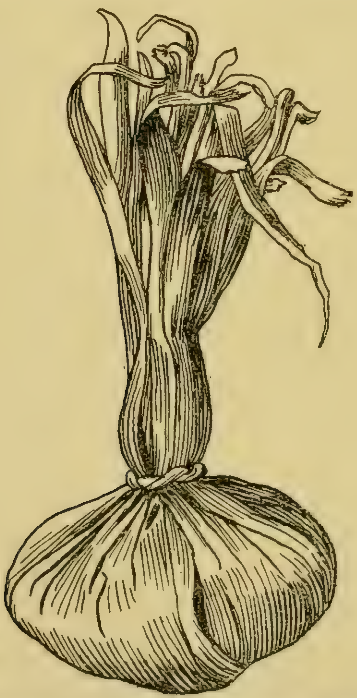


FIGURE 167.—Maize-leaf ball, *Taulipáng*, *Macushí*. (Redrawn from Koch-Grünberg, 1917–28, vol. 3, pl. 36.)

be called the national game of the Chacoan and *Araucanian* peoples. From the latter it spread to the *Tehuelche.* It is more commonly played by teams; in the Chaco these represent bands. Men, women, and children play the game among the *Araucanians.* Various magico-religious rites were carried out by the *Araucanians* in connection with the game, such as fumigation and anointing of the sticks and abstention from sexual intercourse.

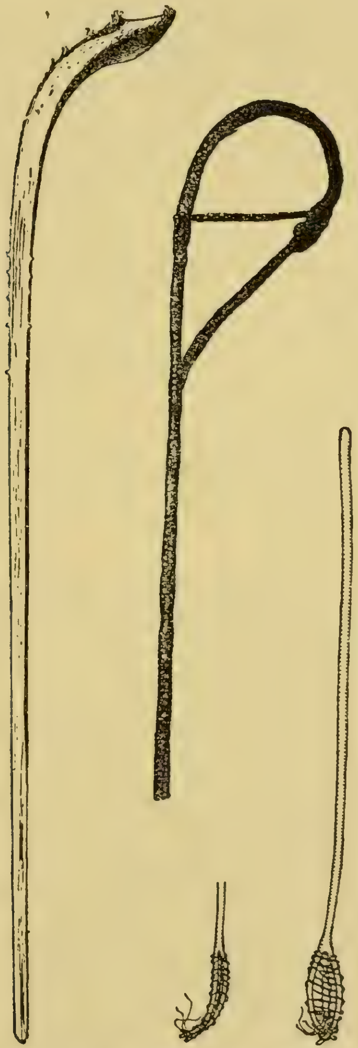


FIGURE 168.—Hockey stick and rackets. *Left:* Palm-leaf stalk hockey stick, *Choroti.* (⅕ actual size). *Right:* Spoon-shaped racket, *Chiriguano.* (1/16 actual size.) *Center:* Side-meshed racket, *Chamacoco.* (After Rosen, 1924, fig. 174; Nordenskiöld, 1910, fig. 8; and Baldus, 1931, p. 109.)

Among the *Chiriguano* and *Chamacoco*, the stick used in the game of hockey is a racket—of the spoon-shaped type (fig. 168, *right*) among the former, of the side-meshed type (fig. 168, *center*) among the latter. Wegner (1934, p. 70, pl. 34, fig. 5) reports that he found in a child's grave of pre-Columbian date at Nazca, South Perú, a miniature side-ringed racket. What interpretation should be given this reported find is doubtful. No other indications of earlier hockey are found in Peruvian archeological sites.

Pillma, a game in which the players gather in a circle and a ball is thrown from beneath the thighs and kept in the air, is peculiar to the *Araucanians* and to the Pampean and Patagonian peoples who in the early 18th century came under strong *Araucanian* influence.

A hoop-and-pole, or more accurately hoop-and-arrow, game is recorded sporadically—within the Guianan, Amazonian, Chacoan, and Fuegian areas. In it arrows are shot at rolling papaw fruit (*Arawak* of Pomeroon and Moruca Rivers), hoop of solid wood (*Tupí-Cawahíb* of Madeira River), discus of cactus (*Chiriguano*, fig. 169), or grass hoop (*Ona*).

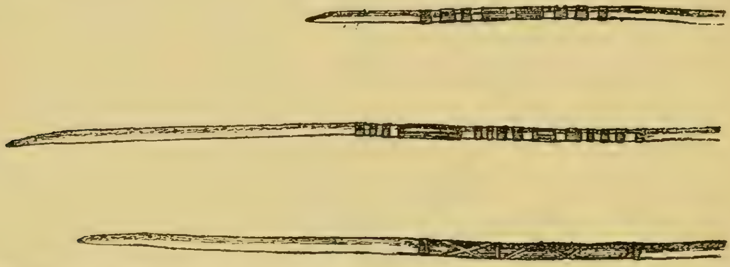


FIGURE 169.—Arrows used in *Chiriguano* hoop-and-arrow game. The arrows are decorated so that each player can easily identify his own. (After Nordenskiöld, 1924 b, fig. 6.)

Stilts are widely distributed, being specifically reported from the Middle American, *Araucanian*, West Indian, Amazonian, Guianan, Eastern Brazilian, Eastern Bolivian, and Chacoan areas, but not from the Pampean or south thereof. In some cases these may well be post-Columbian. Extraordinarily high stilts—3.20 m. (10.7 feet) or more long, with the foot rests 1.70–2.00 m. (5.7–6.8 feet) above ground—are used by *Apinayé* hunters returning to the village, the ends of the pole being grasped by the walker in front of his chest, not held under his armpits and behind his shoulders.

The "national game" of the *Northwestern* and *Central Ge* of the Eastern Brazilian area, recorded from since the 17th century in the region, is the relay race by male adolescents and adults carrying sections of tree trunks. These logs may weigh up to about 200 pounds (90 kg.). The race is commonly by teams, the team themselves being drawn among some tribes from moieties or societies. A race with lighter logs is run by *Canella* girls and women. Logs are used in dancing and were carried by the *Southern* and *Northern Cayapó*, but the log race proper is lacking as it is among the *Caingang*. The log race is reported clearly only from *Ge*-speaking peoples.

Games resembling North American dart or snow-snake are reported from the Chacoan and Eastern Brazilian areas. The *Abipón*, *Mocoví*, and *Chané* (fig. 170) throw rods, clubs, or sticks along the ground, making them rebound; the *Canella* shoot arrows along smooth ground making them rebound, while the *Apinayé* slide them.

Games similar to North American ring-and-pin are found in the Chacoan and Amazonian (*Panoans*, *Ticuna*) areas. Among the *Mbayá*, 56 to 60 rings on a string were tossed up to be caught on a stick—a game still played by the *Chamacoco*. In a ring-and-pin game, reported only among the *Sherente*, a player tries to catch on a

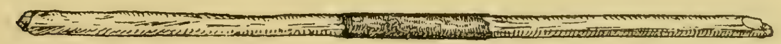


FIGURE 170.—"Snow snake," *Chané*. (After Nordenskiöld, 1920, fig. 32.)

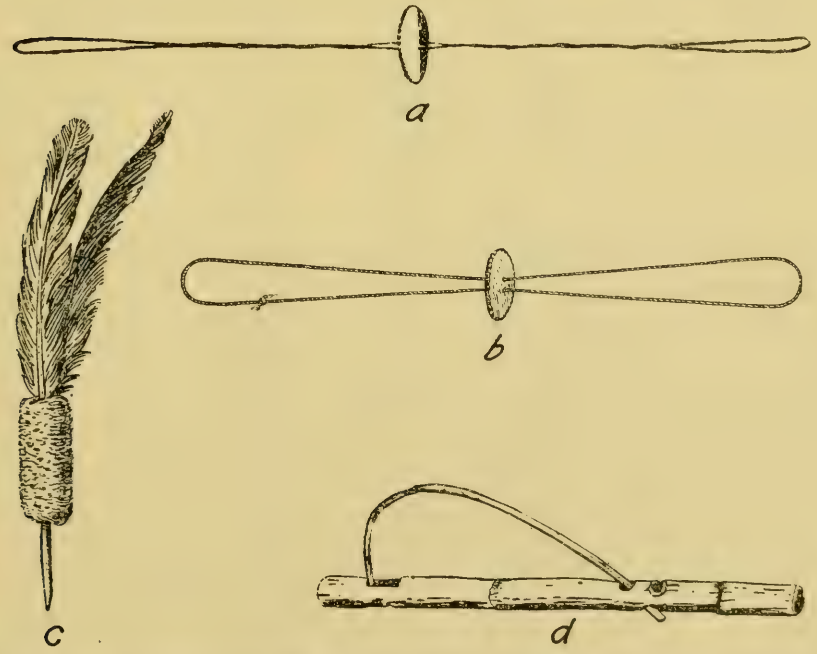


FIGURE 171.—Miscellaneous gaming implements. *a*, *Taulipáng* buzzer. (⅙ actual size.) *b*. *Chané* buzzer. (⅙ actual size.) *c*, *Chané* corncob dart. (⅓ actual size.) *d*, *Chané* bean shooter. (⅙ actual size.) (After Koch-Grünberg, 1917–28, vol. 3, pl. 36; Nordenskiöld, 1910, fig. 9; and Nordenskiöld, 1920, figs. 33, 34.)

12-inch (0.3 m.) stick a hoop about 12 inches in diameter thrown by his opponent.

Cat's cradles are reported from all the areas north of the *Araucanian* and Pampean, except the West Indian and Orinocoan. They appear to be particularly developed in the Guianan.

Tops, of various shapes and materials, and either humming or silent, are reported for the Middle American, Andean, *Araucanian*, West Indian, Amazonian, Guianan, Eastern Brazilian, Eastern Bolivian, and Chacoan areas.

Among children's toys bull-roarers, buzzers, corncob darts, and beanshooters are widely distributed east of the Andes and down to the Chaco, but are lacking apparently in the Andean (apart from records of bull-roarers among the *Chocó* and *Aymara*), *Araucanian*, Pampean, Patagonian, and Fuegian areas. Bull-roarers as toys are common in the Amazonian, Eastern Brazilian, Eastern Bolivian, and Chacoan areas; buzzers (fig. 171, *a*, *b*), in the same areas and also in the Guianan. Darts made of a bit of corncob with a feather stuck in or through it (fig. 171, *c*) are reported for the Guianan and Chacoan areas and from the *Chimila* of Colombia; the beanshooter, made with a flexible strip of bamboo or other material to provide power (fig. 171, *d*), in the

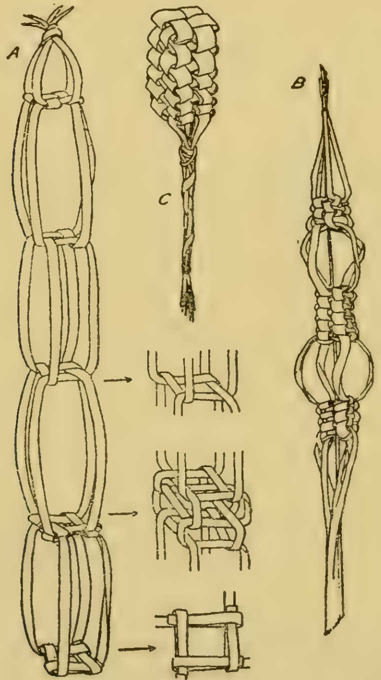


FIGURE 172.—Leaf-strand figures. *A*, Clouds; *B*, a lamp; *C*, a rattle. British Guiana. (After Roth, 1924, fig. 243.)

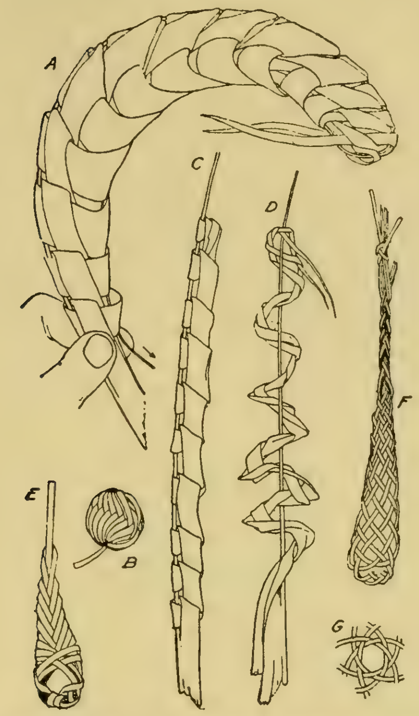


FIGURE 173.—Leaf-strand figures. *A*, Sweetheart's whereabouts; *B*, a ball; *C*, *D*, fancy forms; *E*, hassa fish; *F*, *G*, finger stalls. British Guiana. (After Roth, 1924, fig. 241.)

Eastern Bolivian and Chacoan. A particular game of patience, common in the Old World as well, and perhaps of European introduction, occurs in the Eastern Bolivian area; other forms, probably unrelated genetically, in the Guianan.

Characteristic leaf-strand toy figures (figs. 172, 173) are found in the Guianan, Eastern Bolivian, and Eastern Brazilian areas and among the modern *Carib* of Dominica; woven finger stalls (fig. 173, *F*, *G*) in the Guianan area and on the Tiquié River.

**Localized distributions.**—Among many games and amusements of local or very limited distribution may be mentioned: voladores (*Chorotega*, *Nicarao*); boxing (Chacoan area); mock battles of various kinds (Andean, Eastern Bolivian, and Eastern Brazilian areas); juggling (*Siusí*); shield game (*Warrau*); games like European jacks (*Araucanian*, Pampean), hop scotch (Pampean), and blind-man's buff (*Araucanian*, *Yahgan*); hoop rolling (Chacoan, Eastern Bolivian); games similar to quoits or duck-on-a-rock (*Quechua*, *Aymara*, *Chiriguano*) and to ninepins (*Chiriguano*, *Chané*); kites (*Mosquito-Sumo*); riddles (*Carib* of Dominica, *Aymara*, *Araucanian*); guessing games—

"shell game" and number of kernels or pebbles hidden in other's hand (*Aymara*), whole word from first syllable pronounced (*Araucanian*). Some of these, such as kites, are almost certainly of European introduction; others, such as jacks, hopscotch, blindman's buff, and riddles, probably so.

Vocalizing inarticulately and continuously and at the same time striking the mouth rhythmically with the palm of the hand—the familiar so-called "war whoop" of the North American Plains Indians—is recorded in connection with recreational and/or other gatherings and activities in the Chacoan, Pampean (*Araucanian* influence?) and *Araucanian* areas.

## GAMBLING GAMES AND SPORTS

Gambling among South American Indians is confined to the risking of things of value on the issue of certain sports like hockey and horse racing or of games of hazard. Betting on present nesciences or on future contingencies of other kinds and the pledging of onerous acts are not recorded. Here and there prizes are or were offered to winners of sports: of ball games among the 16th-century *Itatin* of the Eastern Bolivian area; of club-throwing contests among the 18th-century *Abipón and Mocoví* of the Chacoan area; of archery contests among the *Pancararú* of the Eastern Brazilian area. But such awarding of prizes can hardly be called gambling.

Our factual data on South American gambling and gambling games and sports are scattered through a great number of sources, the more important of which are: Nordenskiöld (1910, 1919 a), Rosen (1924), Karsten (1920 c, 1930, 1932, 1935), Rivet (1925), Romero (1941).

In the present paper we shall deal first with gambling games and sports of European introduction, and afterward with those of native origin.

### EUROPEAN GAMBLING GAMES AND SPORTS

The chief gambling games and sports of European introduction indulged in by the South American Indians are horse racing, playing cards, Spanish dice, and taba.

Gambling and betting in connection with one or more of the first three are or were passionately indulged in, often for very large stakes, in the Chacoan, Pampean (including the *Charrua*), Patagonian, and *Araucanian* areas; not however in the Fuegian. According to Sánchez Labrador (1936, pp. 48–49), the Pampean Indians were first taught how to play and gamble with Spanish dice and playing cards by Spaniards living among the natives as captives or as refugees from Colonial justice; he implies that this had taken place not so long previously, which would give a date around the middle of the 18th century, and that before this the Pampeans had no gambling. It was about this same time that the *Mocoví* of the Chacoan area took over gambling at cards and dice from the Spanish colonists (Fúrlong, 1938, p. 139). Gambling with playing cards and dice can be traced among the *Tehuelche* of the Patagonian area back to the time of the Malaspina expedition of 1789.

The taba game is played with the astragalus of a cow or llama (fig. 174). The bone is thrown by hand, the count depending on which side lands up. The game is in use among some of the Peruvian, Bolivian, and Argentine *Quechua*, some of the Chaco Indians and the *Chiriguano* and *Chané*, and the *Araucanians*, as it is among the Gauchos of Argentina and the upper classes of the Argentine provinces.

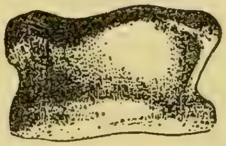


FIGURE 174.—Taba die, *Quechua* of Cuzco region, Perú. (After Karsten, 1935, fig. 17.)

By far the greater weight of evidence points to the conclusion that the taba game, i. e., with use of the astragalus, is an importation from Spain. It has only recently spread into *Araucanian* territory from Argentina. The *Chiriguano* and *Chané* learned it in the sugar mills (Nordenskiöld, 1912 b, p. 165), while only those Chacoan Indians play it who have worked in these mills (Nordenskiöld, 1910, p. 430). The name "taba," although resembling *Quechua* tauva or tahua ("four"), means "astragalus" in Spanish. The game itself, also called taba, is played in Spain with one astragalus (of sheep or lamb) by children or with four as a game of hazard by adults, and in southern Europe goes well back into classic Greco-Roman times. Moreover, not only the game but also divination with astragali occurs among the Peruvian *Quechua*, as it does in Spain and did in classic times. The same game with astragali is found under the same name, "la taba" or "tábatci," among the modern *Tarahumara* of México. (For presentation of theory of native origin, cf. Rivet, 1925.)

The date of the game's introduction into South American Indian life is very uncertain; our specific records go back only several decades. Very interestingly, since its introduction it has become assimilated in function, as a funeral game, among the *Quechua* of Cuzco and of Bolivia at least, to the huayru game (see infra) of the *Quechua*-speaking Indians of the Sierra. Played during the wake, it helps the departed father of a family on his way to heaven, is a mark of friendship toward the deceased, and gives the winner some of the property of the dead man. Among the *Quechua* of the Puna de Jujuy in Northwest Argentina, at the feast of the departed, taba is played to find who should pronounce the prayer for the deceased. Among the Gauchos and Argentinians, however, taba is purely a gambling game, without relation to mortuary customs. (Karsten, 1935, pp. 487–489; Rosen, 1924, pp. 247–248.)

### NATIVE GAMBLING SPORTS AND GAMES

**(1) Sports.**—Of the many native South American Indian sports, there are chiefly three, all of them ball games—the rubber-ball game, pillma, and hockey—that are recorded as being or having been attended with gambling.

In earlier times gambling was associated with the rubber-ball game among the *Taino* of Hispaniola and the *Otomac* of the Orinoco. Among the former such gambling as occurred appears to have been lightly regarded, and the stakes wagered by members of the two teams (and by others?) were objects of little intrinsic value (Casas, 1875–76, 5:507). Acquisition, however, bulked large in the consciousness of the *Otomac;* they played not merely for the fun of the game but to win the substantial stakes. These consisted of baskets of maize, strings of glass beads, and, when necessary, of everything the players had in their houses. The onlookers also bet on their favorites. Association of wagering with the ball game among the 18th-century *Otomac* of Gumilla's and Gilij's day, the period of first close White contact, points to pre-Contact origin and suggests a probable earlier prehistoric connection of some kind with the Mexican or Antillean ball game.

Quite recently, the *Kepkiriwat* of the Guaporé River have been reported as playing the head-ball game to win arrows.

Apart from the above three cases, gambling is not recorded, to the writer's knowledge, as associated anywhere else on the South American continent with the rubber-ball game, and is nowhere so associated with the maize-ball game.

Gambling with pillma and hockey has a more southern distribution, namely, in the *Araucanian* and Chacoan areas. Gambling by the *Mapuche-Huilliche* of Chile is consistently attested by our sources, and for as far back as the first half of the 17th century by Rosales, Ovalle, and Bascuñan, who were the first to give us any appreciable details on *Araucanian* games and sports. At that early date gambling was associated with at least four distinct native pastimes—two ball games and two dice games. It is almost certainly of pre-Hispanic origin among the *Mapuche-Huilliche*, although their later passionate addiction to gambling may be partly attributable to Spanish influence.

The *Mapuche-Huilliche* of the 17th century gambled at a ball game very like, and seemingly the ancestor of, modern *Araucanian* pillma. They likewise wagered, and heavily it seems, on hockey, with stakes of shirts, bridles, horses, and so forth (fig. 175).

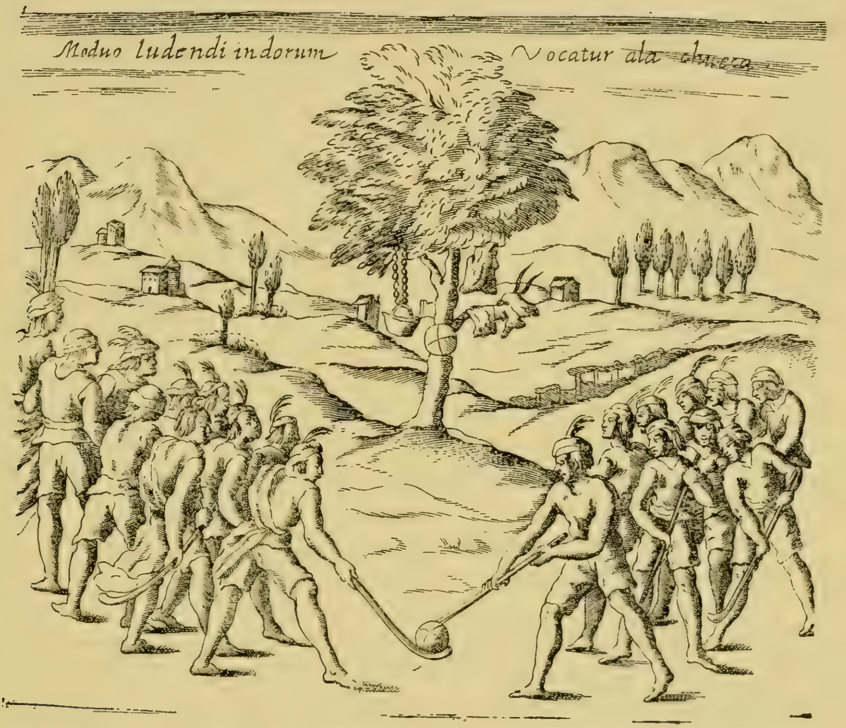


FIGURE 175.—Hockey game. *Mapuche-Huilliche* of early seventeenth century. Stakes are seen hung on tree. (After Ovalle, 1646, opp. p. 92.)

Much of the betting on hockey, still in vogue, takes the form of paired betting, each member of one team betting with a given member of the other team. The spectators also lay wagers. Sometimes serious affairs of public concern were decided by the outcome of a hockey game. We have no evidence, however, that gambling in either ball or dice games is or was resorted to by the *Mapuche-Huilliche* as a magico-religious rite in connection with deaths, harvests, and so forth.

In the Chacoan area, hockey is commonly played for stakes: among the *Mataco*, between villages for large stakes; among the *Toba-Pilagá*, for valuable stakes put up by the team captains or some one else and distributed at the end of the game among the members of the winning team. Our records for gambling with hockey—and for that matter, gambling of any kind except at cards, dice, and horse racing introduced around the middle eighteenth century—among the Chacoan tribes are all very recent, dating only from the last several decades. For all we know, gambling at hockey, taba, and stick-dice (cf. infra) may be of very recent introduction into the Chacoan area.

While both hockey and pillma occur in the general Pampean-Patagonian region, there is no record of gambling in connection with them among non-*Araucanian* Indians. In the middle 18th century, the "Pampa Indians" of Sánchez Labrador were playing a game of "pelota" (hockey? or pillma?), but apparently without stakes. Both games are recorded from the Patagonian area among *Tehuelche*, but again without mention of wagers.

To complete the record for the continent we may add two final instances of gambling at sports: among the early *Chibcha*, betting among the young men at the races held in connection with the solemn sacrifices at Guatavita (Acosta, 1901, p. 136); among the modern *Apinayé*, winning of the arrows of the other players by the boy who slides his dart farthest on the ground.

(2) **Dice games.**—Native games of hazard played with one or more "dice" have a distinctly western distribution in South America, being found only in the Andean and *Araucanian* areas, and in limited regions adjacent thereto, namely, the Chacoan area and one small section of the extreme northwestern fringe of the Amazonian.

*Single-die games.*—A number of games differing somewhat one from the other but all having much in common were played with a single die, and some are today played, in the Highland Ecuadorean and Peruvian sections of the Andean area and in the *Araucanian* area. Among the early Peruvians these went under various names (cf. Romero, E., 1941). The more common earlier and modern names are: wayru, huayru (meaning uncertain), pisca, pichka (*Quechua*, "five"), chunkara (*Quechua:* chunka, "ten"), among *Quechua*-speaking peoples; pasa (*Quechua*, "100"), among *Aymara* and *Quechua* of Perú; quechucáhue (*Mapuche:* quechu, "five"; quechucáhue, "instrument to play quechu"), among the *Mapuche-Huilliche* of Chile. The numbers from which the names are derived refer to marks on the die, to points scored on the throw, or to points required to win the game.

The die itself, of bone or wood, is or was of various forms: a right quadrangular prism, among the modern *Canelo;* a seven-faced one or hexangular pyramid, among the *Aymara* of Perú and some of the modern *Quechua*-speaking peoples of Ecuador and Perú (figs. 176, 177); a five-faced one or pyramid with oblong or squarish base, among the early and modern *Mapuche-Huilliche* and some of the modern Ecuadorean Indians.

In the game, the die is thrown or let fall from a slight height. Among

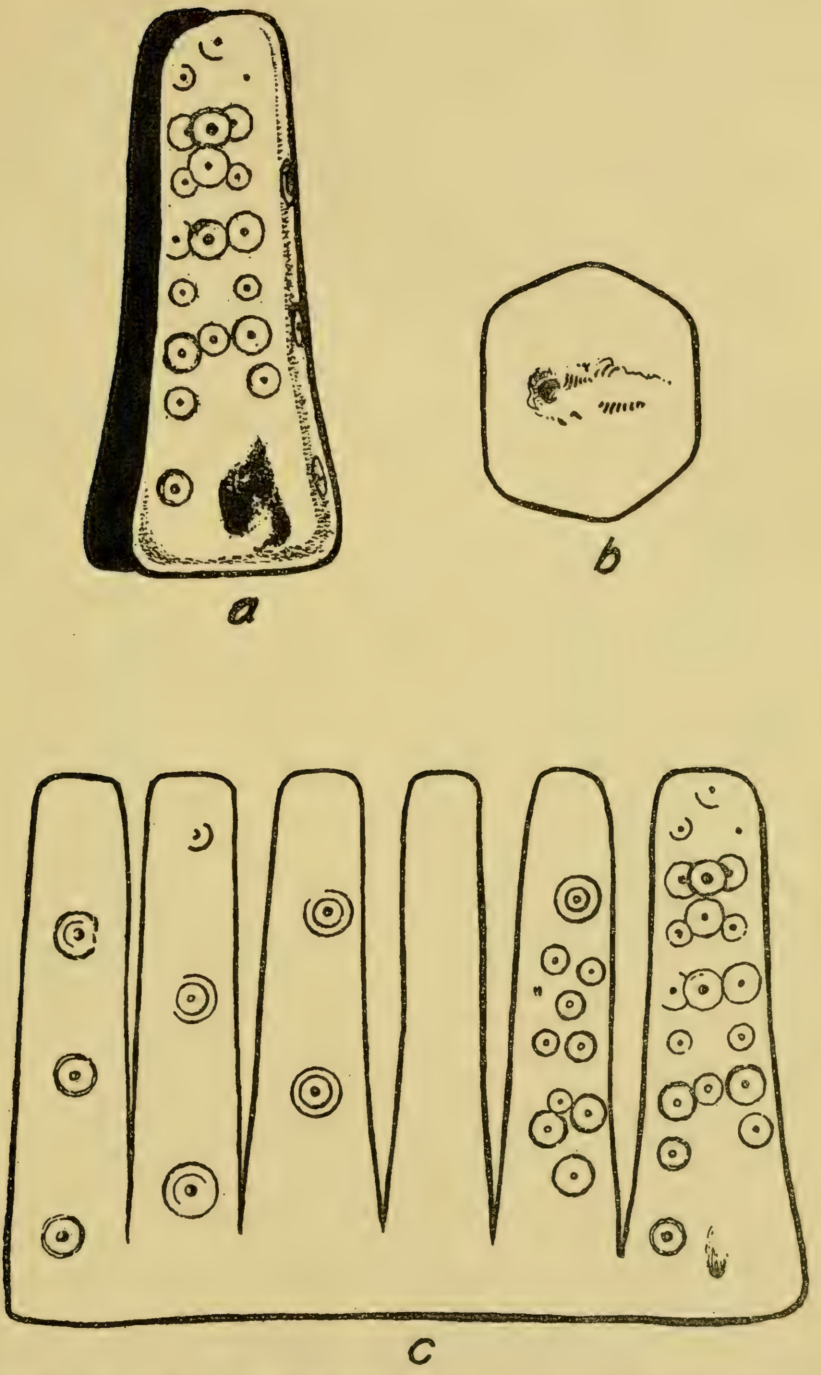


FIGURE 176.—Huayru die, *Quechua* of Ecuador. *a*, Face; *b*, base; *c*, schematic drawing of the six sides with circles indicating count. (After Nordenskiöld, 1930 c, figs. 29–31.)

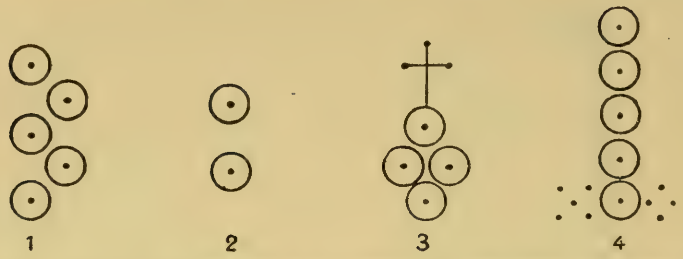


FIGURE 177.—Huayru die, *Quechua* of Ecuador. Counts cut on the four faces of the pyramidal die. (After Rivet, 1925, fig. 1.)

the modern *Mapuche-Huilliche*, count is kept with small sticks which are advanced along in certain holes made in the ground. Among the early Peruvians, it was kept in some of the single-die games with beans or pebbles which were moved around holes excavated in a board or flat stone.

Among the *Mapuche-Huilliche*, the game was and is played seriously for the winnings. Among the early Peruvians it was also played, sometimes at least, for gain—with stakes of guinea pigs, according to Morúa, writing about 1577, or of mantles and live stock, according to Cobo, writing in 1653; but they played "more for fun than from greed of gain" (Cobo, 1890–93, 4: 228) and evidently took their gambling much more lightly than do the *Mapuche-Huilliche.*

Among the Andean and some adjacent peoples, but not, so far as our evidence goes, among the *Mapuche-Huilliche*, the game had and has death-rite functions in addition to or in place of those of recreation and gain. Arriaga (1920, p. 60; 1st ed., 1621) recorded that in his day the Peruvians at their 5-day wakes played pisca "to keep away sleep" and that afterward the clothes of the deceased were washed in the river. His terse statement is confirmed and illuminated by Karsten's studies (1920 c, 1935) of the modern *Quechua*-speaking people of the Ecuadorean Sierra who at wakes must keep from sleeping and must play huayru, while on the fifth day the clothes of the deceased must be washed.

At the modern Ecuadorean Sierra wake for the head of a family or for a housewife the huayru game is played with a hexangular pyramidal die by the invited male adolescent and adult guests, but not by near relatives of the deceased. The winners receive stakes generally consisting of domestic animals owned by the deceased. The animals are either slaughtered and eaten in common by the guests and hosts or are taken home by the winners to be eaten there. The game is to honor the dead. The luckiest winner is regarded as the one to whom the deceased feels most friendly, for it is the deceased's invisible hand that causes the players to throw winning or losing casts of the die.

Among the *Quechua*-speaking *Canelo* of the Montaña adjacent to the Ecuadorean Sierra, a similar game, called by them huairitu, is played, at the wake of a father or mother of a family, with a right rectangular prism die of manioc (fig. 178, *left*), against a similar conceptual background and for similar ends; and among the nearby *Semigae* (*Shimigay*) Indians of the middle Pastaza, related to the *Záparo*, practically the same game for the same ends, with a conical die made of manioc and called singu. (See also supra on role of taba game in the mortuary complex of the *Quechua* of Cuzco and Bolivia.) The *Colorado* Indians of Santo Domingo in western Ecuador play games at wakes, but not for the property of the deceased nor for winnings.

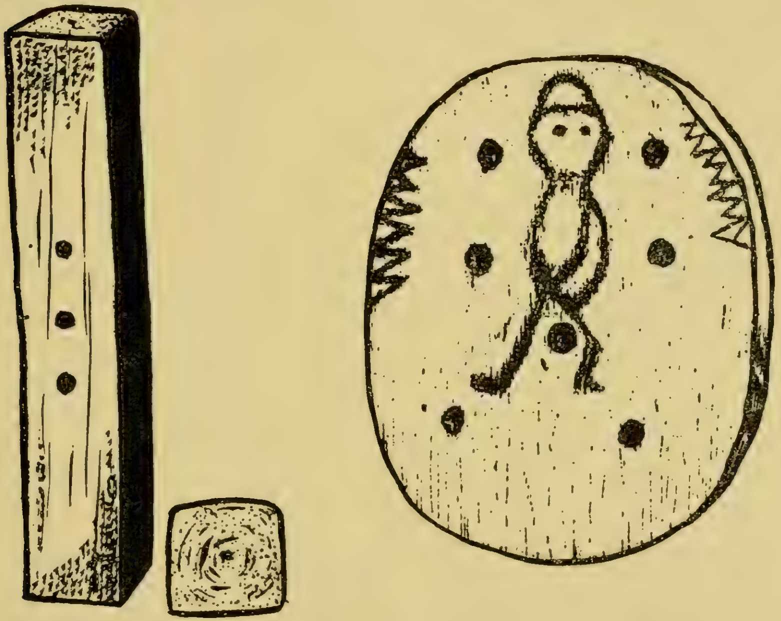


FIGURE 178.—*Canelo* gaming die and disk. *Left:* Prism die. *Right:* disk-board for maize-grain game. (After Karsten, 1935, figs. 12, 13.)

*Multiple-dice games.*—The two most important gambling games played with more than one die are lligues in the *Araucanian* area and tsúka in the Chacoan.

The lligues game, which can be traced back in our sources to the beginning of the 17th century and as a gambling game to the middle thereof, and which is almost certainly aboriginal, is played by 2 people, with 8 to 12 beans, blacked on one side and white or natural color on the other. The player shakes the beans in his hand and throws them down, counting his points according to whether the blacked or noncolored sides turn up, and using small and large sticks as tallies. In Colchagua the game is said to be played with shells of nuts; in another region, probably the province of Maule, with four buttons. This bean game is not recorded from any part of the Andean area; whether there be any historical connection between the *Araucanian* use of beans as "dice" and the Andean use of them as tallies is problematical.

The tsúka game (tsukoc, houka, chunquanti, chukanta, chucaray, and other variants, from *Quechua*, chunka, "ten": Nordenskiöld, 1910, 1919 a; Rosen, 1924; Karsten, 1932) is confined to the Chacoan area, where it is played by a number of the Chacoan tribes proper as well as by the *Chiriguano* and *Chané*. Four stick dice of wood are used, convex on one side and flat or concave on the other, and about 10 cm. (4 in.) long (fig. 179, *top*). The player takes two of the dice in each hand and throws them against one another so that they touch as they fall to the ground. Points are won according to fall with convex side up. In counting (fig. 179, *bottom*) the two opponents start from their respective "homes", holes 1 and 23 (or 21) on opposite ends of a straight or crescent row of 23 (or 21) holes in the ground, each player with an arrow in his "home" and with pegs called "sheep" in holes 2 to 11 and 13 to 22, respectively. Hole 12, the "river," serves as a trap. According to count on the throw, the player moves his ar-

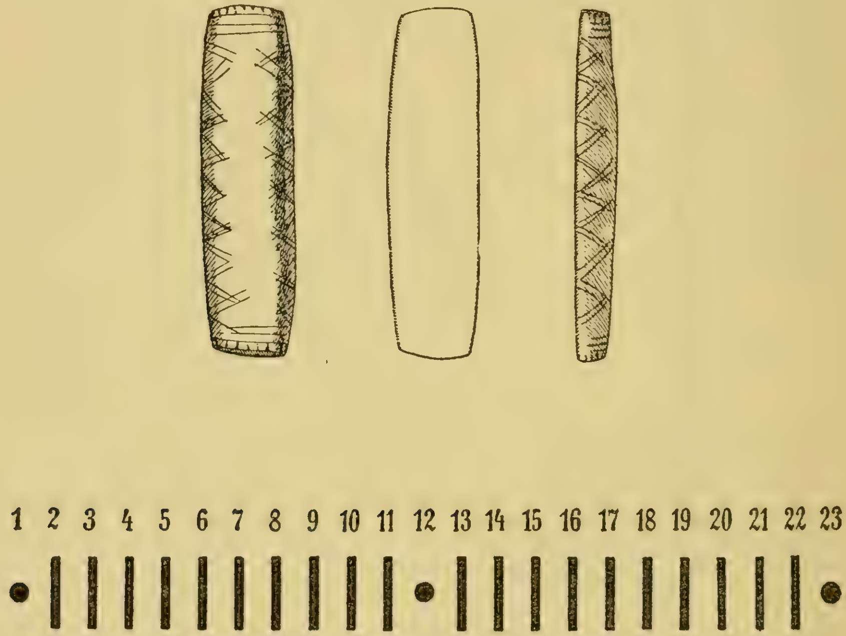


FIGURE 179.—Tsúka game of the Chaco. *Top: Ashluslay* stick-die. *Bottom: Chané* counting holes. (After Nordenskiöld, 1910, figs. 1, 2.)

row back and forth across the whole row, "killing" his opponent's "sheep" as he does so.

The tsúka game is nearly always played for stakes, and often for very substantial ones. It has no role whatever in the mortuary complex. Among the *Chorotí*, Karsten was told that it is played to increase the edible wild fruits and to prevent starvation.

The origin of this game is a puzzling mystery. Our first records of it go back only to the beginning of the present century. Many words of *Quechua* origin are used in it, which would suggest an Andean origin. But no dice game like this is reported in early or recent sources from the Andean area. The tsúka game is strikingly similar in many respects to the stick-dice game of North America (Culin, 1907; Spier, 1928, pp. 341–342, 347–351).

A game somewhat similar to tsúka, and called chukareta, is played by the *Chiriguano* and *Chané*, with a heap of sticks—apparently, from the context, as a gambling game (Nordenskiöld, 1920, pp. 99–100).

The *Canelo* of the Ecuadorean Montaña had a multiple-dice game, now largely given up, which they played at wakes, for purposes similar to those described previously for the *Canelo* huairitu game. On a disk-shaped board with a figure representing the deceased and with seven holes, the players in turn threw four grains of maize at a time, with the object of having them fall into the holes on either side of the figure (fig. 178, *right*).

Guessing games of chance, such as the widespread stick games, hand game, and moccasin game of North America, are reported from nowhere on the South American continent.

### DISTRIBUTIONAL AND HISTORICAL SUMMARY

Gambling in earlier post-Contact days had and today still has a quite limited and distinctly western distribution in South America. Apart from the sporadic *Otomac*, *Kepkiriwat*, *Canelo-Semigae*, and *Apinayé* occurrences cited above, it is not recorded in either early or recent sources, to the writer's knowledge, for the Middle American (Nicaragua to Panamá), Orinocoan, Amazonian, Guianan, Eastern Bolivian, Eastern Brazilian, or Fuegian areas. Prior to about the middle of the 18th century, when gambling at European cards, dice, and horse racing was introduced from the Spanish colonists, gambling was lacking in the Patagonian and Pampean areas. In view of the silence of our earlier sources regarding gambling in the Chacoan area, more probably gambling there is of post-Contact introduction, from European, Andean, and perhaps Pampean-*Araucanian* influences; gambling at Spanish cards and dice came in around the middle 18th century, betting at horse racing perhaps a little earlier; gambling at hockey, taba, and stick dice—with clear indications of some Andean influence in the latter two—is recorded only within very recent decades. The *Canelo* and *Semigae* gambling at wakes is pretty obviously due to borrowing, probably fairly recent, from the adjacent Ecuadorean Sierral culture. On the possible age of the *Kepkiriwat* and *Apinayé* gambling, such as it is, we have no evidence.

In early Colonial times gambling, dating from pre-Contact days, was in vogue in: the Andean area, at dice games for gain and as a mortuary custom among the Peruvians, from whom it apparently spread, perhaps quite early, to the Ecuadorean Sierral Indians, and in one recorded instance at races among the *Chibcha* of Guatavita; the *Araucanian* area, at dice and ball games; the Antillean area among the *Taino* of Hispaniola and Orinocoan area among the *Otomac* only, at rubber-ball games.

So far as our evidence goes, all these peoples, except perhaps the *Mapuche-Huilliche* and *Otomac*, took their gambling gains very lightly. In the main, passionate addiction to gambling, such as is later recorded in the *Araucanian*, Chacoan, Pampean, and Patagonian areas, appears to be, in large part at least, a reflection of the gambling frenzy that pervaded Old World Spanish society in the 16th and 17th centuries (cf. Pfandl, 1929; Ballesteros y Beretta, 1918–41, 4: pt. 2), and that was carried by the early settlers and adventurers to the New World, where it found a congenial climate on the Colonial frontier.

Gambling in the Andean area and among the *Canelo* and *Semigae* has been and is mainly a mortuary custom, although light gambling for gain was earlier in vogue in Perú. Elsewhere it was and is practiced mostly or exclusively for recreation and gain.

We have no intensive field studies on the dynamic aspects of gambling among any of the peoples of South America—on the factors responsible for its presence or absence in given tribes and areas or for the acceptance of or resistance to the spread of European or native gambling complexes, or on its integrating or disintegrating effects upon native culture, society, or personality. Hence any attempt to treat in the present article the dynamics of gambling in South America would be little more than speculation and guesswork. Such intensive field studies for aboriginal South America—and incidentally for literate as well as nonliterate peoples of the rest of the world—are urgent desiderata. Anthropologists and sociologists alike have given the subject stepmotherly treatment.

## GENERALIZATIONS AND COMPARISONS

Some of the more striking general features of the game and amusement complex of South American Indian culture are: The relative poverty of the game pattern in the Fuegian and early Patagonian and Pampean areas, and strangely enough in the Andean, as compared with that of the areas north and east of these; the particularly rich pattern of the Chacoan area, at least in the modern period; a seeming predominance of quiet games, mostly dice games, in the Andean area, contrasting with the prominence of active, often strenuous or violent, sports in the *Araucanian* area to the south and in most of the remaining areas of the continent east of the Andean Cordillera; the absence of team games toward the southern end of the continent, in the Fuegian area and earlier it seems in the Patagonian; the marked western distribution of gambling, in earlier times confined almost entirely to the *Araucanian* and middle Andean areas, and even in more recent days found almost exclusively in areas (Patagonian, Pampean, Chacoan, Northern Andean) adjacent to and influenced by these. The *Araucanian* area links typologically and probably historically with both the Andean through its characteristic dice games and gambling and with the Chacoan through its equally characteristic hockey game.

A comparison of the South American games and amusements in which implements are employed with those of North America reveals some interesting resemblances and contrasts. It is not our purpose to offer any interpretation of these, but merely to call attention to the facts.

Culin (1907) lists such North American games and amusements as follows: (*a*) Games of chance: dice games, guessing games (stick, hand, four-stick, moccasin); (*b*) games of dexterity: archery, snow-snake, hoop and pole, ring and pin, ball (racket, hockey, double ball, ball race, football, ball juggling, and four additional highly localized and specialized ball games); (*c*) minor amusements: shuttlecock (with and without battledore), tipcat, quoits, stone throwing, shuffleboard (resembling ninepins), jackstraws, swing, tilts, tops (hand-, cord- and whip-spun, simple and humming), bull-roarer, buzzer, popgun, beanshooter, and cat's cradles.

Of these all are found in South America except guessing games of chance, double ball, ball race, the four specialized and localized ball games, tipcat (European?) and jackstraws (European?). The chief North American games lacking in South America are the first three of the foregoing: guessing games of chance, double ball, and ball race.

Of the implement games found in South America but lacking in North America the most striking are the log race of the *Ge* of the Eastern Brazilian area and the pillma ball game of the *Mapuche-Huilliche* of the *Araucanian*.

The data are not available for an adequate corresponding comparison of South American with North American games and amusements in which implements are not used, but so far as our data go, they seem to show an equally high proportion of resemblances and low proportion of contrasts.

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# STIMULANTS AND NARCOTICS

By John M. Cooper

## INTRODUCTION

Lewin (1931, p. 30) describes stimulating and narcotic drugs as "agents capable of effecting a modification of the cerebral functions, and used to obtain at will agreeable sensations of excitement or peace of mind." He divides them into five groups: euphorica, phantastica, inebriantia, hypnotica, and excitantia. All of these five groups except the hypnotica are represented in the stimulants and narcotics of aboriginal use in South America, southern Middle America, and the West Indies. In the following pages we shall deal with these native stimulants and narcotics in the following order, rather than in that of Lewin: Tobacco, *Piptadenia* snuff, alcoholic beverages, *Ilex* (maté, guayusa), *Paullinia* (yoco, guarana), cocoa, coca, *Banisteriopsis*, *Datura*, miscellaneous. Lewin classes coca among the euphorica or sedatives of mental activity; *Banisteriopsis* and *Datura* among the phantastica or hallucinating substances; alcoholic beverages among the inebriantia; tobacco, *Piptadenia*, *Ilex*, *Paullinia*, and cocoa among the excitantia or mental stimulants.

## TOBACCO

Tobacco (numerous native names, listed in: Dixon, 1921; Stahl, 1924) has been used in one form or another by the Indians of the West Indies, southern Middle America, and South America since earliest Contact times and had been used no doubt long before the coming of the European. It is derived from various species of the genus *Nicotiana* (*N. tabacum*, *N. rustica*, *N. undulata*, *N. paniculata*, and probably others), mostly from cultivated plants, and more commonly homegrown, although by some tribes it is procured through trade from other Indians or from Whites. There is some evidence of the use here and there of wild plants, as among the early Peruvians and some of the modern *Aymara* and Mato Grosso peoples.

The cultural history of aboriginal tobacco on the continent since the era of Discovery shows two dominant trends: first, marked tribal and territorial expansion of use; second, equally marked increasing secularization in use.

Our earlier sources, prior to about 1700, are silent on the aboriginal use of tobacco in any form in the following areas: Most of the Amazon and its tributaries, much of Eastern Brazil, the Chaco, the Uruguayan and Argentine Pampas, Patagonia, and the Magellanic and Chonoan Archipelagoes.

For good parts of this great blank area, especially the central Amazon region and the "*Puelche*" section of the western Argentine Pampa, our sources prior to 1700 yield scant cultural data of any kind; consequently, their silence falls short of proving absence of tobacco use at the time. In some other parts, as in Eastern Brazil, the Chaco, and the La Plata region, use may have been confined to magico-religious rites and so may have escaped the notice of early White observers. The problem is further complicated by the fact that archeological finds of pipes, in some cases in seemingly pre-Columbian deposits, have been made in Eastern Brazil and in the La Plata region, suggesting that at least in these areas tobacco smoking had been practiced in pre-Contact days.

In other parts of our great blank area the historical picture is clearer. Our cultural information from sources prior to about 1700 on the *Charrua*, "*Querandi*," and other peoples of the Uruguayan and eastern Argentine Pampas, the *Tehuelche*, the Fuegians, and the *Chono* is sufficient to justify the confident inference that tobacco was not used by them in this early period. The pipes found in the Chubut region of Patagonia are almost certainly post-1700. The beginnings of *Tehuelche* use of tobacco can be dated from historical records as of about the middle of the 18th century; of Fuegian use, as of quite recent decades.

At the present time tobacco is used in one form or another and for one purpose or another by nearly all the Indian tribes of Middle and South America from Honduras to Cape Horn. Exceptions are rare. A few scattered tribes, such as the *Páez*, some Montaña groups, *Guahibo*, *Mura*, *Parintintin*, *Tupí-Cawahíb*, *Chama* of Bolivia, and *Guayakí*, do not, according to last recent reports, use it at all. Among a few others, such as the *Cayapa*, *Sirionó*, and *Botocudo*, tobacco is definitely reported on traditional or historical grounds to be of relatively recent introduction. Among the non-coca-chewing Indians of the Ecuadorean Sierra and the habitual coca-chewers of the Peruvian and Bolivian Highlands, tobacco is rarely or never used except to a limited extent medicinally and/or ritually.

During the period from first Discovery to about 1700, over most of the tobacco area, use was, it seems, exclusively or chiefly magico-religious and/or medicinal, as among the Peruvians and *Mapuche-Huilliche*, but in some regions, as in the West Indies, it was pretty surely secular and hedonic as well. At the present time, in many parts of the tobacco area use is still chiefly magico-religious and/or medicinal, as among the *Aymara*, many Bolivian tribes, and the Ecuadorean Sierra Indians; but in many other parts, as in large areas of northern South America, the Chaco, the Pampa, Patagonia, Fuegia, and southern Middle Chile, use varies from largely to exclusively secular and hedonic. White influence seems partly, but not wholly, responsible for this basic historic shift in purpose of use.

Tobacco is used in South America in six main ways: smoking, snuffing, eating, chewing, drinking, and licking.

Of these six, smoking is by far the most widespread. The chief area in which cigars and cigarettes—a clean-cut distinction between the two is not definable, nor, for that matter, between them and one form of tubular "pipe" (cf. Stahl, 1930, pp. 64–74)—are or were the exclusive or prevalent forms of smoking is the continuous one extending from southern Middle America and the West Indies through the Guianas and most of the Orinoco and Amazon forest and savanna region.

At the present day pipe smoking occurs as the exclusive, prevalent, or alternative form of smoking in three chief areas of South America: (1) Part of the Guiana hinterland; (2) part of the Marañon-Huallaga-Ucayali region and downstream on the Amazon to about the mouth of the Javari; (3) the very extensive, almost continuous zone, beginning in the north on the lower Araguaya, expanding southeast, south, and southwest over a good part of inland southern Brazil, Mato Grosso, and central Bolivia, then down the whole Chaco to the Pampa and Patagonia, and crossing the Andes to embrace southern Middle Chile. The pipe is of recent or post-Columbian introduction in the Guiana hinterland, downstream on the Amazon, and Patagonia. In early Colonial times its presence is recorded for Eastern Brazil ("*Tapuya*," *Tupinamba*) and Chile (*Mapuche-Huilliche*), and not elsewhere on the continent.

Nearly all our archeological finds of pipes of clear-to-probable pre-Caucasian age have been made either in our zone 3 above or in the Sierral-Coastal belt from Ecuador to North Chile and the *Calchaquí* country.

The combined ethnological, historical, and archeological evidence appears to justify the following broad generalization: In earlier times, shortly after and some time before the period of Discovery—and in large measure at present as well—cigars-cigarettes prevailed over the great northern focal area of the continent and adjacent Antilles and Middle America, pipes over a roughly crescent-shaped belt peripheral thereto on the southeast, south, southwest, and west, a tobaccoless zone being peripheral in turn to the pipe zone. This triple concentric distribution duplicates in reverse the similar triple concentric distributon in Middle and North America north of the Isthmus.

Cigars and cigarettes are made from whole or minced dried tobacco leaves, enclosed or wrapped in leaves of tobacco, maize, banana, or other plant or in the inner bark of trees. The spirally wrapped "cigars" range in length from about 2.5 inches (6 cm.), as occurring along with large ones in the upper Xingú region, to the giant ones of the Uaupés Valley, 8 inches to 2 feet (20–60 cm.), and of the early Panamá Indians, 2 to 3 feet (60–90 cm.). These large Uaupés cigars are smoked in an upright forked holder (fig. 180). The early Panamá cigars as described by Wafer (1903, p. 109, cut) were smoked with the

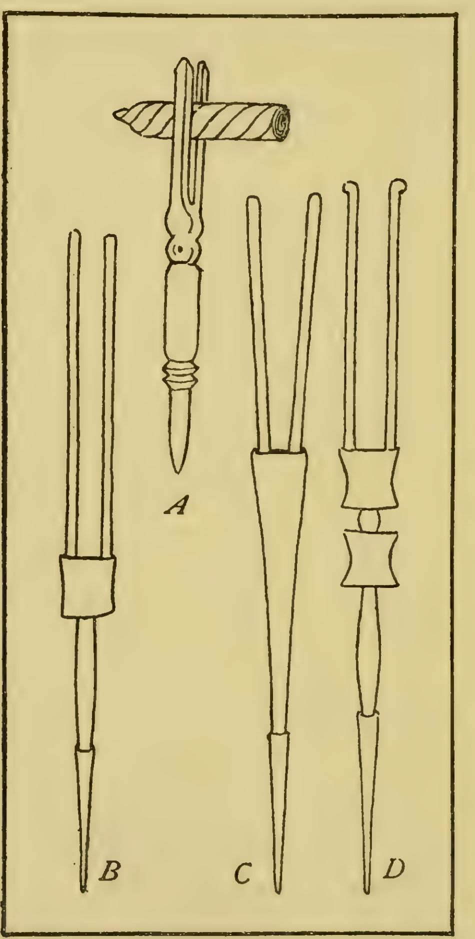


FIGURE 180.—Cigar holders of the Uaupés River Indians. (After Roth, 1924, fig. 66.)

lighted end in the mouth of the smoker, who blew the smoke through the length of the cigar into the faces of the others, who cupped their hands to breathe it in through mouth and nose, a mode of smoking very similar to one still current in the Panamá region (Spruce, 1908, 2:436; Nordenskiöld, 1938, p. 497, pipes).

Pipes are of reed, bamboo, wood, dry hard fruits, bone, clay, or stone, in tubular, elbow, monitor, and composite forms. The composite pipes are often just a conico-tubular pipe to which a separate stem has been attached.

Of aboriginal types, the tubular (fig. 181, *left*) are the most widespread, especially in the Chaco and in Eastern and Southeastern Brazil, and, on the historical and archeological evidence, are apparently a

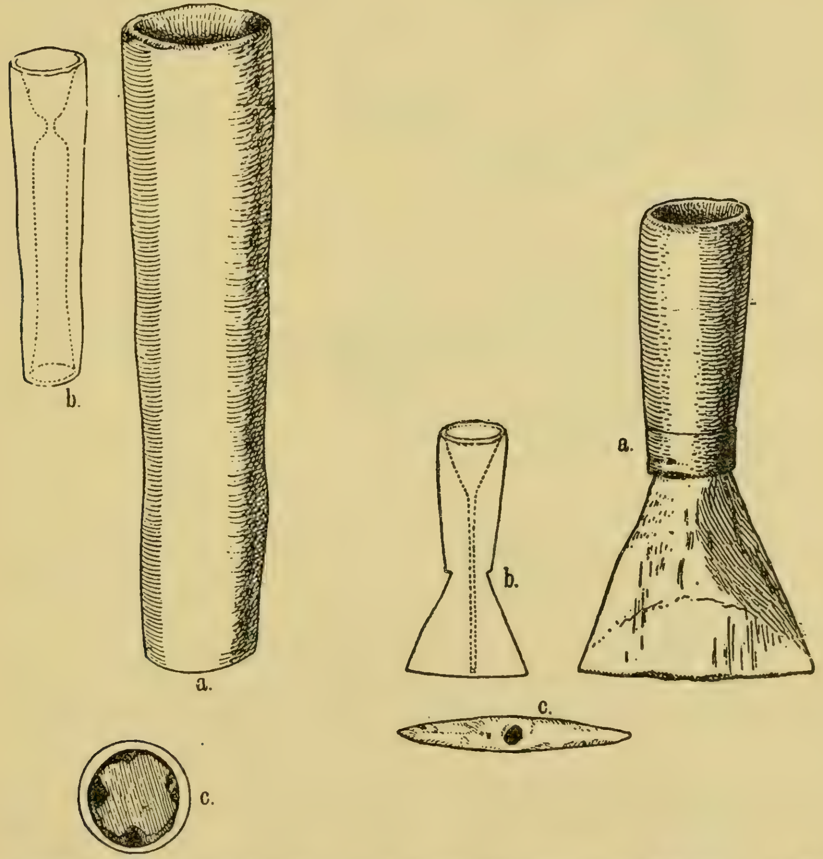


Figure 181.—Chaco tobacco pipes. *Left:* Tubular wooden pipe, *Mataco.* *a*, Side view; *b*, schematic cross section; *c*, end section (⅔ actual size). *Right:* Tubular wooden pipe with flat lip piece, *Choroti.* *a*, Side view; *b*, schematic cross section; *c*, end section (⅔ actual size). (After Nordenskiöld, 1908, figs. 2, 7.)

very old, perhaps the oldest, form on the South American continent. Among some of the tribes of Bolivia and the Chaco these have for convenience a flattened lip end (fig. 181, *right*). Among some of the Chacoans a fiber filter is fitted inside the tube. Elbow pipes are found chiefly, apart from obvious White borrowing elsewhere, in widely scattered sections of a belt running from Alagoas in extreme Eastern Brazil down the Brazilian coastal provinces and across North Argentina and Patagonia to Chile. Monitor pipes (fig. 182) occur mainly among the *Mapuche-Huilliche* and *Tehuelche* and in two seemingly pre-Columbian archeological sites of southeastern Bolivia (Nordenskiöld, 1931, p. 91). Composite pipes, of separable bowl and stem, occur in various forms, two of the more characteristic forms being the cylinder- or spool-bowled ones of the Chaco and the cone-bowled ones of the Montaña (fig. 183) and Chaco. Pipes with human or zoomorphic carving or molding are relatively rare, being reported chiefly

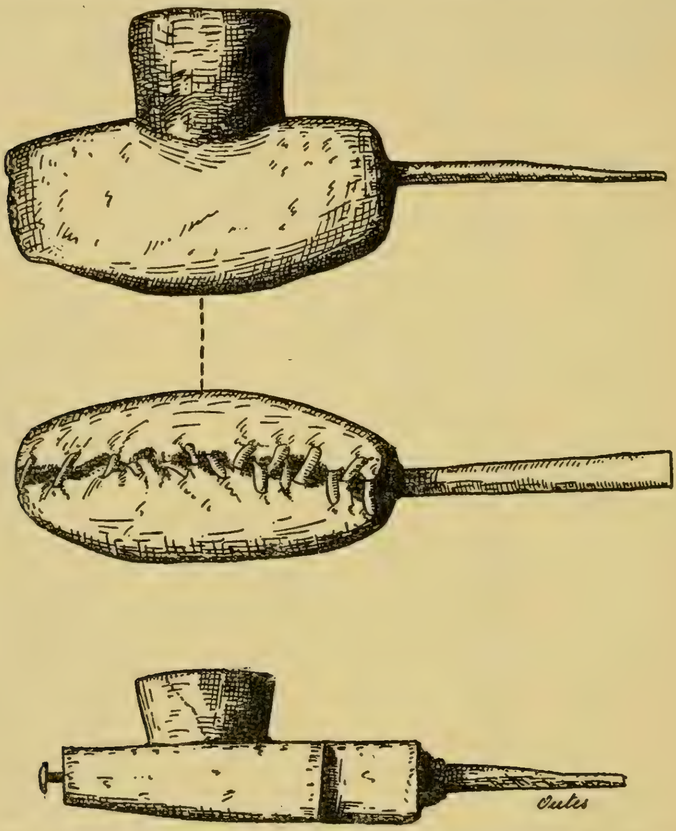


Figure 182.—Modern *Tehuelche* monitor tobacco pipes, Chubut Territory, Argentina. (⅘ actual size.) (After Outes, 1905, figs. 172, 173.)

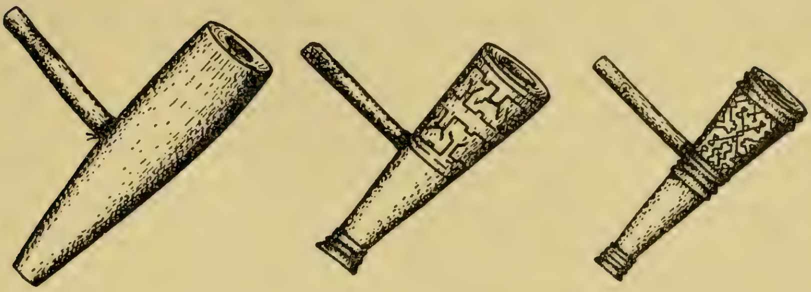


FIGURE 183.—Tobacco pipes of wood with stems of hind bone. *Concbo*, Ucayali River, eastern Perú. (2/7 actual size.) (After Farabee, 1922, fig. 7.)

from the Chaco and from widely scattered archeological sites—not all pre-Columbian apparently—in Venezuela, Ecuador, Perú, North Argentina, and extreme Southern Brazil.

Pipe tobacco is sometimes mixed with some other plant substance, such as tree bark in the Chaco and among the *Mapuche-Huilliche*, and calafate (*Berberis* sp.) wood shavings among the *Tehuelche*, or is replaced by some substitute, as among the *Bororo*, the Chilotans, and some Chacoans. Especially characteristic of the Chacoan-Patagonian region, although occurring also elsewhere with cigars (as among *Bacaïri* and Crévaux's "*Ouitoto*"), is the custom of each of a group taking a few puffs and then passing the pipe to the next man.

According to Havestadt (1883, 2:663), the *Mapuche-Huilliche* of the middle 18th century smoked tobacco by burning it in a shell receptacle and inhaling the fumes through a tube.

Tobacco snuffing, not always distinguishable in our sources from *Piptadenia* snuffing, is recorded from three chief regions (map 9)—the Orinoco country (*Otomac*, *Tamanac*, *Maipuré*), the Montaña with an extension down the Purús (mostly *Tucanoans*, with some *Panoans*, *Arawakans*, and *Tupians*), and early Perú.

The tobacco snuff used medicinally and hygienically by the early Contact Peruvians was made, according to Cobo, from the root of the plant. Elsewhere tobacco snuff is made by drying the leaves and powdering them. In some cases, the snuff is mixed with plant ashes, as among the *Arawak* of the Purús, or with *Piptadenia*, as among the *Omagua*.

Among some peoples, tobacco is snuffed without instruments, but among the great majority instruments, like those used for *Piptadenia* snuffing, are employed for inhaling or blowing the snuff into the nostrils. These are: a single hollow tube (*Yamamadí*); two tubes blown by two partners (*Campa*); forked tubes of three types—(*a*) with slightly diverging forks, one in each nostril, for inhaling (*Paumari*); (*b*) with widely diverging forks (fig. 184, *left*), a companion blowing the snuff into his partner's nose (*Piro*); (*c*) smaller (fig. 184, *right*), with widely diverging forks, the snuffer putting one fork in his nostril and the other in his mouth and blowing (*Piro*, *Tamanac*, *Maipuré*). Occasional substitutes for tobacco (and *Piptadenia*) are recorded, such as: the unidentified topasayri among the early Peruvians, cauca leaves in the Juruá-Purús region.

Tobacco eating is comparatively rare. It is recorded for the *Coto* and *Cocama* of the Montaña. Tobacco powder is just put in the mouth and swallowed.

Tobacco chewing has a very broken distribution (map 9): in the West Indies, among the *Island Carib;* in Colombia, by early *Chibcha* priests and modern *Goajiro* shamans; in the Montaña, by a large number of tribes; in Central Guiana, the Chaco, and Eastern Brazil, by some other scattered tribes. While a great number of these tobacco-chewing peoples are adjacent to the coca-chewers of the Andean Sierra, a very considerable minority are not. Tobacco chewing is definitely absent from the *Mapuche-Huilliche-Tehuelche* tobacco complex.

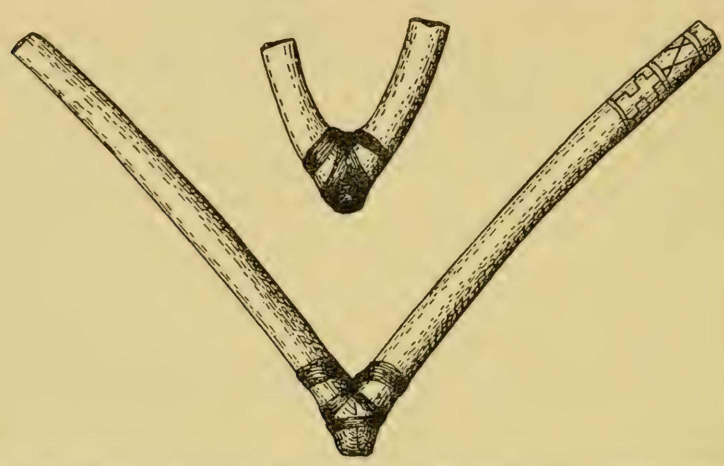
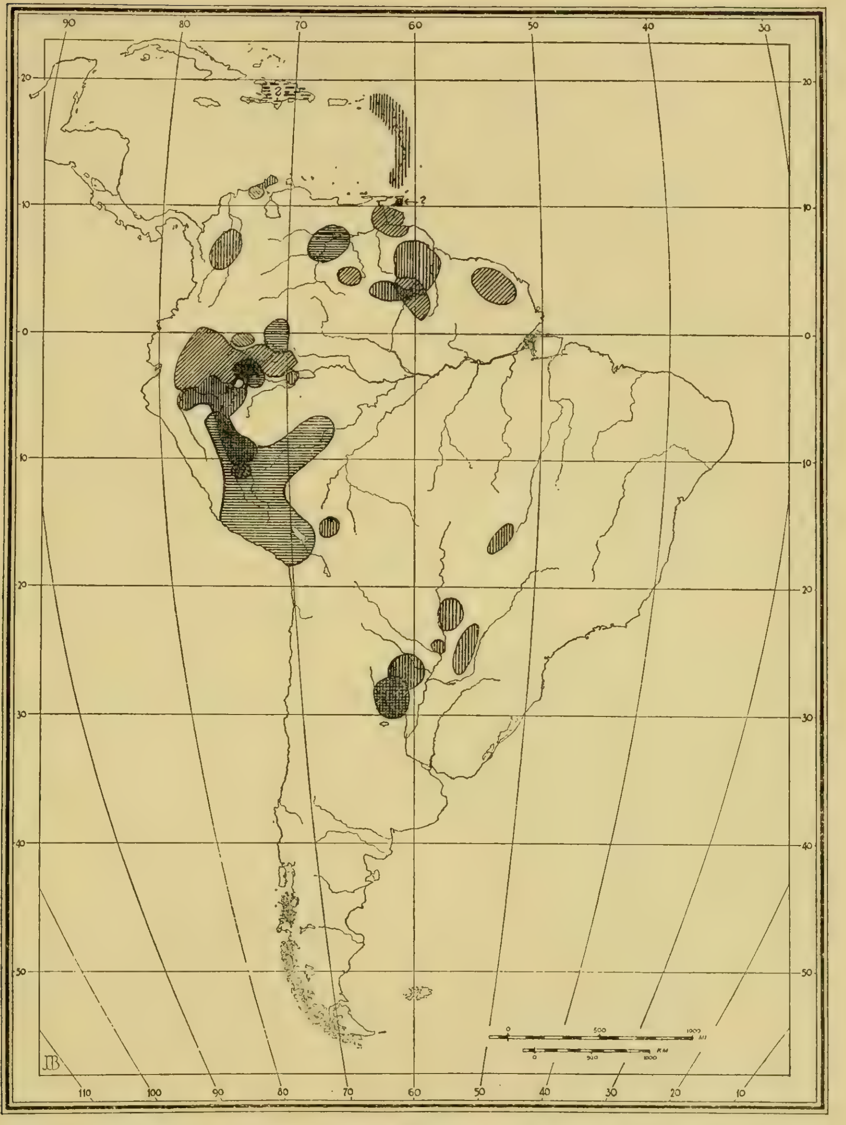


FIGURE 184.—Tobacco snuffing tubes, Puno, eastern Perú. (Approximately ⅕ actual size.) (After Farabee, 1922, fig. 5.)

In some areas chewing tobacco is mixed with another substance, usually alkaline: in parts of the Guiana-*Island Carib* area, with ashes, black-niter earth, or pulverized shell; in the Chaco, with plant or bone ashes. Here and there, as with *Goajiro* shamans (Mackenzie, 1945, p. 158), the chewer swallows the tobacco-laden saliva, thus inducing a kind of nauseated intoxication. Where the tobacco supply runs short, a substitute may be chewed: the koro-pa root (*Toba*, *Chunupí*); several plants (Venezuelan Indians: Ernst, 1890, p. 243). These appear to be mostly nonstimulant masticatories, as is the *Tehuelche* maki (gum resin from the incense bush).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Map 9.—Distribution of tobacco snuffing (*horizontal hachure*), chewing (*vertical hachure*), drinking (*diagonal hachure, upward toward right*), and licking (*diagonal hachure, upward toward left*).

Tobacco drinking has two main centers of distribution (map 9): much of the Montaña region, and some of the Guiana area. To prepare the tobacco liquid, tobacco leaves are either boiled in water, or chewed and then spit out into a container, as among the *Jívaro*, or else are just steeped in water, as among the Barama River *Carib* of Guiana. The liquid may be taken either through the mouth and drunk, usually nauseating and narcotizing the drinker, or else, as sometimes by men or shamans among some of the Montaña tribes, through the nose.

Tobacco licking (map 9) is reported for a very limited area of the upper Amazon tributaries (*Witoto*, *Bora*, *Jívaro*, *Campa*, *Piro*) and for the *Arhuaco* of northern Colombia (Mason, J. A., 1924, pp. 11–12). Tobacco leaves are boiled in water to the consistency of tar, or are soaked, pounded, and mixed with thickened cassava starch. The syrupy product is commonly kept in a shell or gourd and carried around. The user sticks a finger or two or a small stick into the dark mass, and then licks it off. Among the *Arhuaco*, it is customary when two men meet for each to dip his finger in the other's gourd and to touch his lips with the substance. A somewhat similar tobacco paste, with the addition of other ingredients, is in use as pellets in contemporary Venezuela (Lewin, 1931, p. 297).

While, on the whole, in South America tobacco is used more by men than by women and in many tribes the latter either must not or do not use it, nevertheless in many tribes and extensive areas, especially where White influence is strong, both sexes use it freely. Sex differentiation in use seems to have a very broken and erratic distribution, even within limited cultural areas, such as northern Colombia, Central Guiana, and the Chaco.

There is a marked tendency among South American Indians, as there was among earlier Antillean ones, so to use tobacco as to induce more or less acute intoxication. This may be done by swallowing the smoke (e. g., *Tehuelche-Araucanian*), by intensive rapid long-continued smoking, by swallowing the juice while chewing (*Goajiro*), by snuffing (early Perú, *Ipurina*), and by drinking tobacco water (Guiana, parts of the Montaña). In most cases this has magico-religious significance, as when done by shamans or lay persons to induce trance, dreams, visions, and communication with spirits; in other cases, as seemingly among the *Tehuelche-Araucanians*, merely for hedonic purposes.

Purely hedonic or recreational use of tobacco is at present very common in many areas. Such secular use is, however, largely post-Columbian and due to White influence. But it was not unknown at the time of Discovery, as the West Indian evidence shows pretty clearly. Pleasure use is common at drinking sprees. Among social purposes of use, the most common perhaps is in greeting guests or visitors and in symbolizing friendship and camaraderie. Peruvian Indians are reported by Yacovleff and Herrera (1934–35, p. 45) to use *Nicotiana glauca* in powder form with chicha for criminal ends, the effect being like that of *Datura stramonium.*

Tobacco is hygienically and medically used for many purposes: to relieve fatigue (*Tapirapé*), to clear the head (early Perú, *Jívaro*), to cure headache (*Conibo*), dysentery (*Campa*, *Piro*), and other ailments. A large number of tribes in and adjacent to eastern Bolivia, many of whom do not smoke, use it to get rid of gadflies that burrow under the skin of human beings—a use reported also among the 18th-century Indians of Maynas Province (Veigl, 1785, p. 285), the modern *Jívaro*, and from Ega on the Amazon (Bates, 1892, p. 384).

Tobacco enters very much into the South American shamanistic and general magico-religious complex. Evidence of its use as an offering or sacrifice comes from a great many parts of the continent—ranging from the *Cuna* rite of burning the leaves in a brazier as incense, to the *Tehuelche* one, reminiscent of North America, of blowing smoke ceremonially toward the four quarters.

Among the many and varied uses made of tobacco by shamans, the two more commonly reported are: blowing the smoke on persons, especially the sick, and on objects; and smoking, drinking, or snuffing tobacco to induce narcosis, dreams, visions, and visitations from and communication with spirits. Tobacco is also used, less frequently, in shamanistic or lay divination, as among the *Goajiro* by watching the direction in which the smoke drifts (Nicholas, 1901, p. 629), and in foretelling the future, as among the early Peruvians (Polo de Ondegardo, 1916, p. 197). The drinking of tobacco water in such quantity as to bring about intoxication with nausea plays a central role in the preparation of candidates for shamanship in Guiana and in parts of the Montaña (*Jívaro*, *Zaparo*). Among the *Jívaro*, drinking tobacco water, squirting juice in the nose, smoking large cigars, swallowing smoke, and painting the body with tobacco juice are prominent features in initiation and marriage ceremonies, victory feasts, and other rites. The *Jívaro* have a well-defined concept of a tobacco-plant spirit.

An over-all comparison of tobacco use in South America and in North America north of about the Mexican border reveals certain major resemblances and contrasts. In both areas: the tubular pipe looks very archaic; magico-religious purposes of use are, or earlier were, primary, with secular or hedonic use secondary; tobacco was a favorite sacrifice or offering; hedonic use has greatly gained on religious since the Discovery. Pipe types show appreciably less variety and elaboration in South America than in North America. On the other hand the tobacco complex shows appreciably greater variety and elaboration (many kinds of snuffing, drinking, licking, etc.) in the cigar-cigarette zone of South America than in North America—although perhaps not greater in the South American pipe zone, which is a better basis for comparison. In general, too, the use of tobacco in South America, in the West Indies, and in Middle America up to the northern Mexican border tends much more toward intoxication or extreme excitation, is in a sense more "Dionysian," and is associated more closely with free individualistic shamanism; while in North America north of the Mexican border the use of tobacco is, or was, generally much more tranquil, sober, and moderate, more "Apollonian," and is associated in secular and religious practices more with institutionalized formal ritualism.

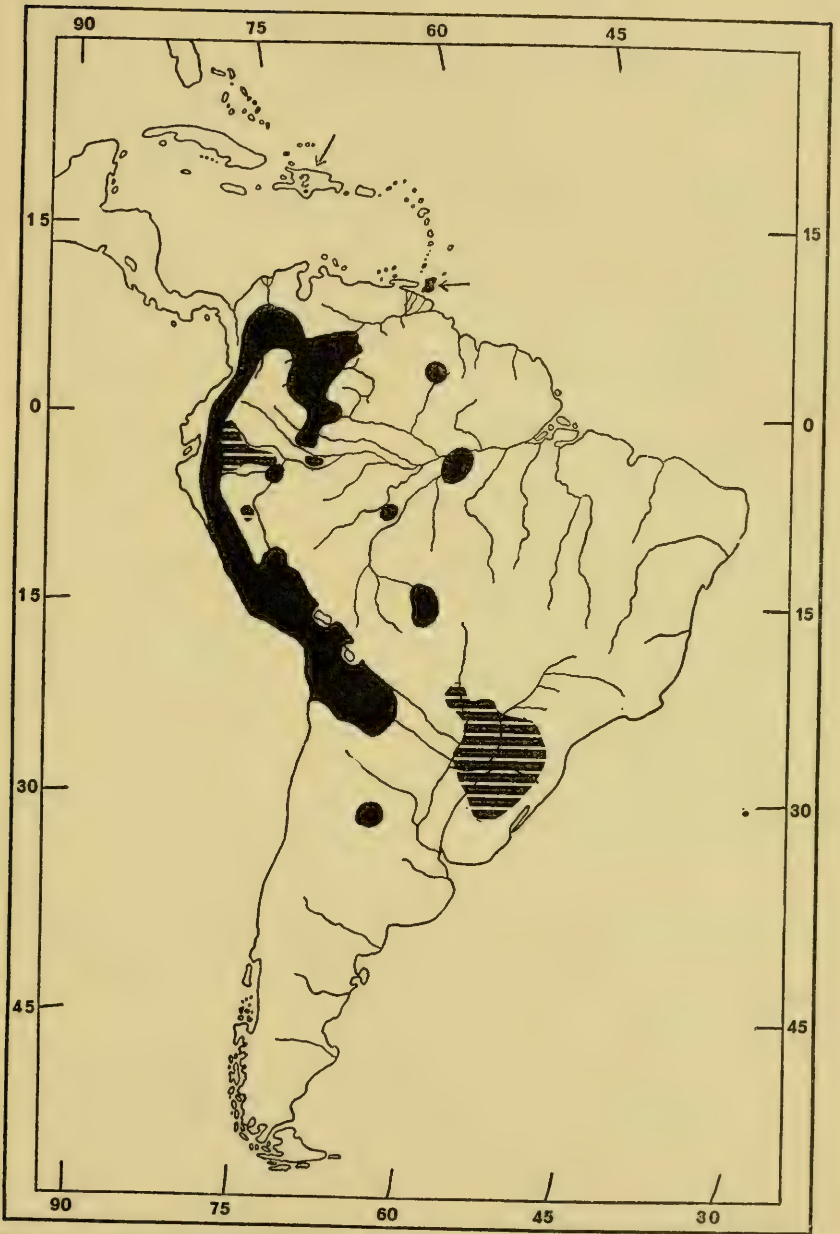
(Chief general sources on South American use of tobacco: Stahl, 1924, all phases of problem; Nordenskiöld, 1908, pipes; Mason, J. A. 1924, brief general treatment; Karsten, 1935, magico-religious aspects.)

### PIPTADENIA SNUFF

A potent snuff (paricá, curupa, cohoba[?], yupa, yopa, yop, niopo, vilca, huillca, sebil, hatax, jataj) is made from the seeds of wild or cultivated trees of the genus *Piptadenia* (*P. peregrina*, *P. macrocarpa*, *P. colubrina*).

To judge from such records as we have, the chief center of intensive use of *Piptadenia* snuff is in northwestern South America—among most of the *Chibchan*-speaking and other tribes of the area extending from the Colombian Highlands east across the llanos to the upper Orinoco and south to the Uaupés and Yapura (*Chibcha* of Highlands, *Tunebo*, *Girara*, *Achagua*, *Otomac*, *Yaruro*, *Saliva*, *Piapoco*, *Guahibo*, and peoples of the Meta, Vichada, Guaviare, Sipapo, and Uaupés Rivers). Outside this area the use of *Piptadenia* snuff is specifically recorded for: the early Contact Indians of Trinidad (Castellanos, 1850, 4: 93) and perhaps Hispaniola; the "*Ouitoto*" (of Crévaux), *Tuyuca*, *Yahuna*, *Piro*, *Ticuna*, *Passé*, and *Western Omagua* of the upper Amazon and the Montaña; the *Mura* and *Maué* of the Amazon-Madeira and the *Catawishi* of the Purús; the *Paravilhana* and *Taulipáng* of northern Brazilian Amazonas; the Highland *Quechua* of Perú, the *Mataco* and the upper Guaporé tribes; the 18th-century *Lule* and the 16th-century Indians around Córdoba, Argentina. (Fairly full listing in: Lovén, 1935; Restrepo, 1895; Uhle, 1898; Spruce, 1908; Safford, 1916; Roth, W. E., 1924; Pardal, 1937; Serrano, 1941.)

Our tribal records on which the above list and the accompanying distribution map (map 10) are based are probably very incomplete. On the other hand, some of the attributions may not be correct, since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Map 10.—Distribution of *Piptadenia* snuffing (*solid black*) and Ilex preparations, (*horizontal hachure*), maté to the east, guayusa to the west.

in some cases the lack of exact botanical identification makes it doubtful whether we have to do with *Piptadenia* snuff, tobacco snuff, or snuff from some other plant—as, for instance, from "topasayri" in early Perú (Cobo, 1890–93, 1:404–405), or from an unidentified tree bark among the *Yecuaná* (Koch-Grünberg, 1917–28, 3:386).

The seeds were dried and pulverized, and used without addition of lime or ash among the *Guahibo* (Spruce, 1908, 2: 426), but among the *Otomac* were mixed with quicklime from calcined snail shell and with cassava flour; among the *Maué*, with plant ashes and juice of the leaves of *Cocculus* sp.; among the upper Guaporé tribes, with plant ashes and pulverized tobacco leaves. The mixture was dried into hard cakes. Among the early Contact Peruvians, the seeds and the sap or juice were also mixed with chicha (Polo de Ondegardo, 1916, p. 30; Cobo, 1890–93, 2:95, 4:142), while among (unspecified) Indians of the Paraguay region the pods were burned and the smoke inhaled (Dobrizhoffer, 1822, 1:399).

When used as snuff, the hard cake was reduced to powder and taken into the nostrils through two quills secured together, as among the *Maué;* or through Y-shaped tubes of bird or jaguar leg bones—in some cases, as among the *Guahibo*, *Catawishi*, and *Tuyuca*, by placing one end in the nostril and the other in the mouth and blowing hard; in others, as among the *Otomac*, *Guahibo*, *Omagua*, and *Maué*, by placing the ends of the forks in the nostrils and the stem in the snuff and inhaling strongly. Under still another method, as among the "*Ouitoto*" (of Crévaux), *Omagua*, *Mura*, and upper Guaporé tribes, two men paired, with two straight or curved hollow tubes, and each vigorously blew the snuff into the nostril of the other. A *Piptadenia* decoction was also used as an enema among the *Catawishi* and the *Mura.*

When this snuff is inhaled or blown in strongly, as is the more common practice, a temporary mild or deep intoxication results, and sometimes a condition described as fury or madness. Trance, too, may be superinduced, especially among shamans, with visions and spirit visitations.

The snuff was taken for various purposes: as a stimulant in everyday use, by, e. g., the *Guahibo*, and as an excitant in drinking sprees or before war expeditions; by hunters to make them more alert and to give them keener vision (and, among the *Piro* and *Catawishi*, given to hunting dogs, too, for the same purpose); as a prophylactic against fevers, among the *Maué;* by medicine men, to induce trance, visions, and communication from spirits, and so to help in clairvoyance, prophecy, and/or divination, as among the *Chibcha*, early Peruvians, the Uaupés and upper Orinoco peoples, and *Mataco;* or to bring rain, as among the 18th-century *Lule.*

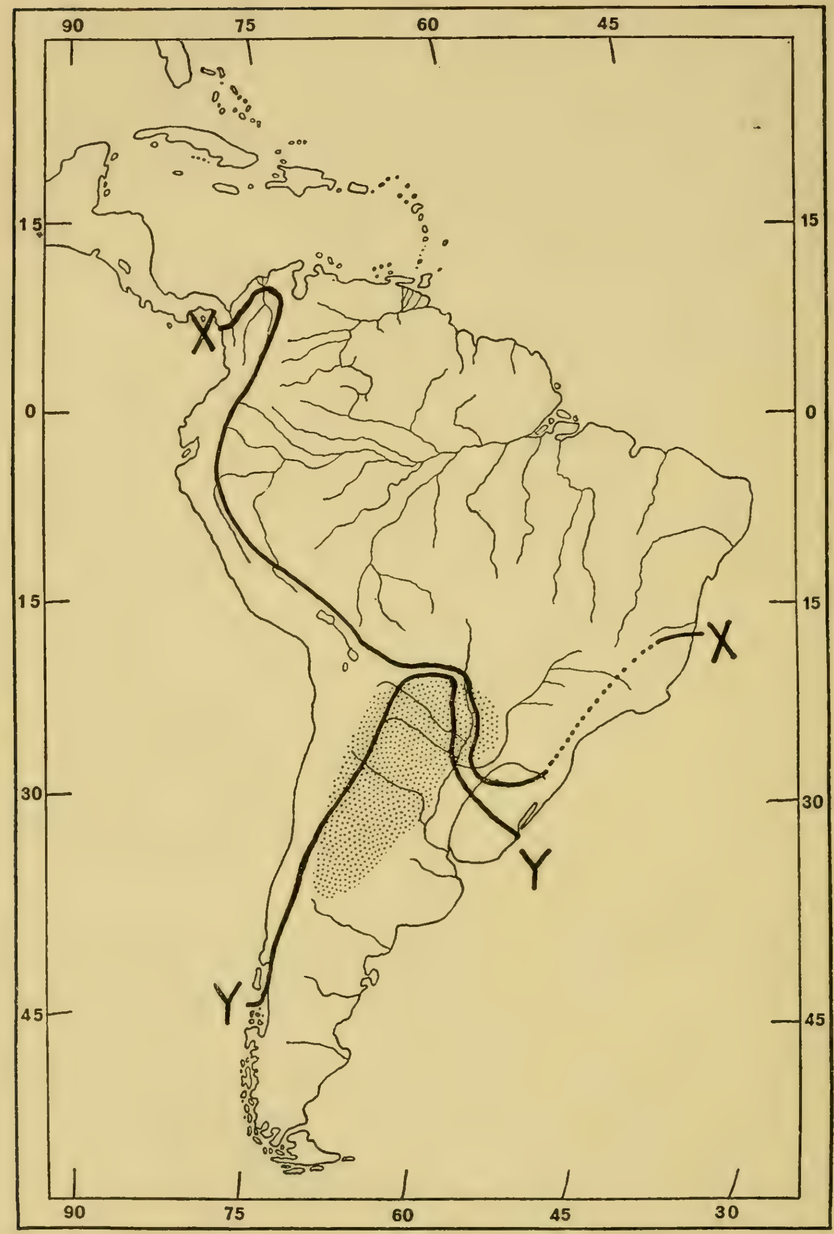
## ALCOHOLIC BEVERAGES

Fermented alcoholic beverages (chicha, massato, kashiri, paiwari, kawin, kawim: for other names, cf. La Barre, 1938) were reported in use in the West Indies, Middle America, the Andean cultural region from Colombia to southern Middle Chile, and in most of the Silval region by the earliest White explorers, colonists, and missionaries, and undoubtedly had long been part of the pre-Contact aboriginal culture. Distilling is practiced at present by certain Indian groups, as a rule largely Europeanized in culture, here and there from Honduras (*Paya*) and Nicaragua (*Ulwa*) to Colombia, Ecuador, and Perú (*Quillacinga*, *Pasto*, *Coaiquer*, *Cayapa*, *Canelo*, upper Napo and Tiquié Rivers), but is of post-Contact introduction from Hispano-American culture. Nearly all South American Indians in close touch with Whites have taken readily to our distilled liquors; the *Ona* of Tierra del Fuego are one of the rare exceptions.

While the use of home-made or bartered alcoholic beverages is today extremely widespread in South America, it is not universal, and in some extensive areas where prevalent at present was earlier absent. The Fuegians had no alcoholic drinks until relatively recent times; the *Tehuelche* none until about the middle of the 18th century, and even in Musters' day (1869) made none of their own, although the *Poyas*, of the Lake Nahuelhuapi region adjacent to *Araucanian* territory, who may have spoken a *Tehuelche* dialect, were brewing a beverage from fruits in the early 18th century. Whether the "*Puelche*" of the western Argentine Pampa had intoxicants prior to the middle 18th century is uncertain. Of the Chaco tribes, the *Mbayá-Guaicurú* were using fermented drinks from algaroba beans when first observed in the second quarter of the 16th century (Schmidel, 1891, p. 18; Pero Hernandez, 1891, p. 135).

In recent decades, alcoholic beverages are reported absent from considerable sections of three areas in the tropical and subtropical forests, viz, sections of: (1) Eastern and Southern Brazil and Paraguay (*Northern*, *Northwestern*, and *Central Ge*, tribes of headwaters of the Xingú, *Guayaki*, *Tapirapé*); (2) Bolivia (the *Tacanan*-speaking tribes); (3) the Montaña (*Witoto*, *Okaina*, *Minuane*, *Bora*, *Pinches* (of Veigl's time, around 1768)). Occasional isolated tribes, such as the *Arhuaco-Cagabá* of Colombia (Brettes, 1903, p. 319) and *Carimé* of Brazilian Amazonas (Salathé, 1931–32, p. 302), also lack alcoholic beverages of their own.

Among the alcoholic beverages of aboriginal South America, those made from maize are used by the greatest number of people and have the widest geographical distribution (map 11). They are chiefly found: in the great fairly continuous area from Honduras to the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MAP 11.—Distribution of alcoholic beverages: *X*, Approximate southern limit of manioc beer (*dotted section indicates lack of data*) ; *Y*, approximate southern limit of maize beer; stipple, approximate area of algaroba beer.

Isthmus in Middle America, and along the Andean cultural belt from the Isthmus and northern and western Colombia through Ecuador and Perú to western Bolivia, the Atacama, the *Diaguita* country, Middle Chile, Chiloé, and, by later introduction from Chiloé, to the southern limit of maize-growing on the Guaitecas Islands; the Antilles; Venezuela and the Guianas; the *Tupí-Guaraní* regions of the Amazon, the Paraguay-Paraná, and the Brazilian Coast and hinterland. They are also common in much of the Montaña, the Orinoco, and upper and middle Amazon and their tributaries, eastern Bolivia and the Chaco, Mato Grosso, and non-*Tupí* Eastern Brazil.

Alcoholic beverages from manioc rank second to those from maize, and have approximately the same distribution as the latter (map 11)—except for two chief areas in which they are lacking, viz: the Andean cultural belt from northern Colombia all the way south to Chiloé; and most of the Chaco. In the major regions where both maize and manioc beverages occur, there are numerous tribes or smaller subregions where only one or the other is recorded. In some of these major regions, as in the Guianas and the Amazon lowlands, premier rank is held by manioc beverages; in others, as in most of the *Tupí-Guaraní* territory, by maize beverages.

Ranking next to maize and manioc beverages are those from palms, algaroba, and honey; and next to these, those from bananas (and plantains), pineapples, sweet potatoes, and sugarcane.

Palm wine, from the sap or fruit of various palms (*Mauritia* sp., *Guilielma* sp., and others), occurs in two main areas; a larger one to the north, embracing much of the Antilles, Middle America, northern and eastern Colombia, the Montaña and upper Amazon, the Río Negro, Venezuela, and the Guianas; a smaller one, in the Mato Grosso, middle Paraguay, and middle Paraná regions (*Guató*, *Bororo*, *Nambicuara*, *Caingang*, *Mbayá*).

Algaroba beer (map 11) from the seeds of the "carob" tree (*Prosopis* spp.), holds first place among the Chaco tribes and is made by the *Chiriguano* to the west and by the "Pampa Indians" (including probably the *Puelche*) and Argentine *Araucanians* to the south. It is also recorded in early Colonial times from the *Diaguita* region. It is brewed mostly during the season from about November to February or later when the seeds are ripe.

Mead, of fermented honey, occurs in two main areas: in parts of Middle America; and widespread though far from universal in a great crescent belt, more or less marginal to the southern Amazonian watershed, extending from the southeastern Brazilian coast to Southern Brazil, Paraguay, and Uruguay, through the Chaco, to the *Sirionó* of eastern Bolivia. In this area it is or was brewed by a number of the *Tupí-Guaraní* and southern *Ge*, by the *Botocudo* and *Charrua*, and by most of the Chaco peoples. It was recorded very early by Schmidel among the *Cario*, by del Techo among the *Kaaigua* (*Cainguá*) and *Gualache*, and [fermented?] by Barlæus among the "*Tapuya*." That mead is not more widely brewed in South America is probably due to the fact that in most areas other materials for alcoholic beverages are so much more readily procurable than honey in quantities sufficient for large numbers of drinkers. (Cf. Dobrizhoffer, 1822, 2:435.)

Fermented drinks from bananas (or plantains), pineapples, sweet potatoes, and sugarcane occur fairly commonly in and are mostly confined to the tropical and subtropical forest and savanna regions of Middle America, Venezuela, the Guianas, and the Orinoco and Amazonian watersheds. There are occasional occurrences outside this area, such as brews from: sweet potatoes among the *Island Carib*, *Camacan*, and *Caingang;* bananas among the *Abipón*.

Among the more localized alcoholic drinks, with some records of occurrences of each, are those from: quinoa (Highland Ecuador and Perú, *Uro-Chipaya*, *Mapuche-Huilliche*); oca (Highland Perú); pine nuts (*Mapuche-Huilliche*, *Caingang*, *Guayaná*, Napo River tribes); cashew (*Mosquito-Sumo*, Guiana); agave (north coast of Veragua, *Ica*); chañar (*Gourliea decorticans*), tusca (*Acacia aroma*) (Chaco, *Chorotí*); mistol (*Zizyphus mistol*) (Chaco); mamey (north coast of Veragua); white potatoes, apples, wheat, barley, pears, quinces, strawberries (*Araucanians*); molle berries (Contact *Inca*, *Araucanians*); *Dioscorea* (*Mosquito-Sumo*, *Taulipáng*, *Camaracoto*); "pumpkins" (*Lengua*); melons or watermelons (*Mataco*, *Chorotí*); papaya (*Camacan*). Numerous other fruits and berries are also used here and there sporadically.

As regards three of the most important South American alcoholic beverages, those from maize, manioc, and algaroba, the general rule seems to hold that in any given tribe or area the favorite beverage is made from the food that bulks largest in the dietary. There are, however, exceptions to the rule, as among some of the tribes of Costa Rica, whose staple food is plantain but whose favorite drink is from maize.

The fermented beverages are made in two main ways: without or with mastication.

Beverages from palm sap, honey, sugarcane, pineapple, and fruits or berries rich in sugar are made without mastication. By way of exception, the *Abipón* chewed honeycomb in their mead making. Beverages from palm fruits, bananas (or plantains), and sweet potatoes are very commonly reported as made with mastication. Beverages from manioc, and from maize, algaroba, and other seeds rich in starch, are usually made with mastication, although there are exceptions as regards maize and manioc (e. g., *Sirionó*) and algaroba (e. g., sometimes in Chaco), and in a great many cases our records are silent as regards presence or absence of mastication. In general, however, the custom of mastication is found very commonly and very widely diffused over practically our whole area in which aboriginal alcoholic beverages occur: Middle America (from Honduras south), the West Indies, and continental South America down to and including the Chaco and southern Middle Chile.

With ingredients rich in sugar, the brew material is left to be acted upon directly by wild yeasts. With those rich in starch, sprouting without mastication is here and there relied on to promote conversion of starch into the simpler carbohydrates or sugar upon which the yeasts can feed; but far more commonly resort is had to mastication through which the ptyalin in the saliva changes part of the starch into sugar and so hastens fermentation by giving the yeast a quicker start.

Details of the process of preparation of alcoholic beverages differ somewhat according to tribe or area, to material fermented, and to use or nonuse of mastication. Grains are dried and crushed or ground to flour, in some areas (e. g., early Panamá and Perú, eastern Bolivia) after being steeped in water until they sprout. They are then usually boiled or heated. The masticated grain may be added to the nonmasticated before or after this boiling, or between a first and second boiling. The liquid is then allowed to ferment, commonly about two to four or more days. Manioc beer preparation follows the same general lines; it may be ready to drink within 24 hours. The sap from palm wine is more commonly collected from incisions in the upper trunk, with or without felling of the tree. For some areas—parts of the Chaco and of the Montaña—concepts of plant spirits and animistic rites to promote fermentation and to strengthen the brew are specifically reported (Karsten, 1926, 1935) and, to judge from scattered hints in our sources, are probably much more widespread.

The liquor is very commonly prepared and stored in large troughs made of hollowed tree trunks (fig. 185); sometimes, in earthen jars. Preparation of fermented beverages is predominantly the woman's

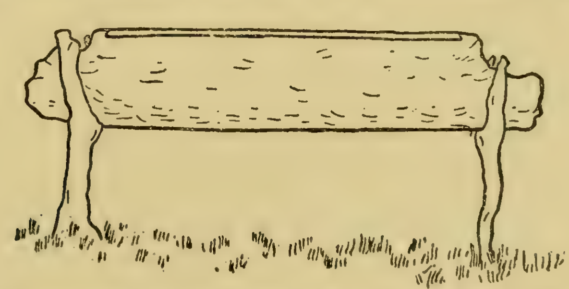


Figure 185.—Community chicha trough, *Motilón*, Colombia. (After Bolinder, 1917, fig. 13.)

task. The women, too, in some cases only the old or the young women, ordinarily do the masticating, although here and there (*Moguex*, Guiana, Rio Aiarí region) the men or the men and children do all or part of it.

To promote fermentation, the *Guaraní* and the *Guaratägaja* (of the Guaporé) add certain leaves to their brew; the *Caingang*, the woody stem of a fern. To promote fermentation, or to give flavor or greater strength, or to do both, leaves (*Siusí*), palm stems (*Aweicoma*), sugarcane juice (*Cuna*, *Carajá*), goat or sheep excrement (*Lenca*), and other ingredients are or were added by tribes here and there. Brews of mixed maize and cassava are also reported occasionally (*Carajá*, *Conebo*).

In some regions, particularly the Andean and parts of the forested lowlands, fermented beverages are drunk as a common everyday beverage. Most of the drinking, however, throughout the great brewing area of the West Indies, Middle America, and continental South America is in connection with drinking sprees, of a social and/or magico-religious nature in which groups participate. These drinking bouts are main or attendant features of gatherings of all kinds, especially in connection with hunting, fishing, harvesting, and other food-getting activities, with visiting and hospitality to guests, with war, victory, and peacetime councils, with births, naming, initiations, weddings, and funerals, and with magico-religious festivals, rites, and celebrations—the specific occasions differing from tribe to tribe and from area to area. The sprees may last from a few hours up to many days, usually until all the available liquid is exhausted. The participants imbibe until they reach various stages of intoxication, from mild tipsiness to complete alcoholic coma. Among nearly all peoples on whom we have information, the bouts are accompanied by and end in the airing of grudges and hurling of insults, which lead to quarrels and fighting more or less violent and not uncommonly fatal. Sex intrigues and orgies are equally common accompaniments. Only here and there, as among the lower Xingú tribes, and the *Ashluslay* and *Chorotí*, is quarreling specifically reported absent. In both the Guiana and Chaco-Pampa area, to prevent grave or fatal results, the women hide all weapons before intoxication has reached an advanced stage. In a good many regions, as in the Chaco, the women (at least the younger and middle-aged ones) do not take part in the drinking, or at most drink quite moderately. In others, as in the Panamá region, and parts of the Montaña and Andean Highlands, they as well as the men get drunk. (For detailed description of spree, cf., e. g., Appun, 1870, pp. 299–302, 315–317.)

Some medicinal use is made of alcoholic beverages, as among the *Aymara*, but the usual purposes of drinking and of drinking sprees are hedonic, social, magico-religious, or, as more commonly, combinations of all three. That the hedonic bulks large is obvious from our sources. The sprees are eagerly anticipated, and are joyous and hilarious affairs, at least until the fighting starts. Some of the social purposes, such as symbolizing hospitality and so forth, are clear from the above-given list of occasions on which drinking is indulged in. Dobrizhoffer adds (1822, 2:413–414) particularly the desire of the *Abipón* through drinking to acquire acuteness in counsel and bravery in fight. Guests and hosts among the early Peruvians customarily exchanged and drank together maize chicha (Betanzos, 1924, pp. 199–200).

Alcoholic beverages were common offerings or sacrifices to supernatural beings and/or the dead in the Andean cultural belt and such sacrifices were early reported by the Carvajal expedition of 1542 far down the Amazon east of the mouth of the Río Negro. They play an important part in girls' rites in parts of the Panamá and Montaña regions, and in many other feasts among the *Jívaro* and *Canelo.* In the Montaña, Mato Grosso and elsewhere, they are important accompaniments of shamanistic training and practice.

We have no published intensive field study of the functions of alcoholic beverages in contributing to the stability or instability of society or of the individual in any South American tribe or community. Such field studies are an urgent desideratum. A short paper by Rodríguez Sandoval (1945) reviews the motives for and rationalizations under which the Indians of the Ecuadorean Sierra drink, viz, to "warm the blood" and impart physical energy, to prolong life, to "rejoice the heart," to give courage and peace of spirit, to manifest friendship, hospitality, and solidarity, to ask favors, to maintain status by thus evidencing wealth, to conform to festival requirements, and so forth.

Habitual addicts proper, driven to daily or periodic alcoholic excess by psychosomatic impulsion, appear to be rare, or, at least in most regions, nonexistent. To judge from the continuous distribution of intoxication over the whole range of alcoholic beverages, and from the fact that getting drunk or being made drunk is customary or obligatory indiscriminately for participants in the rites, festivals, and socio-civic observances, such impulsion as exists looks more social and magico-religious, and in this sense more cultural than psychosomatic. The degree to and manner in which in individual cases physiological and psychological or psychopathic factors, such as physical craving, anxiety, frustration, escape, and so forth, may enter into the picture awaits intensive field investigation, investigation which should yield rich returns.

Nonfermented drinks made from maize, manioc, palm sap and fruits, honey, pineapples, and various berries and other fruits are reported from most areas of the continent. Often our later as well as earlier sources are not clear as to whether the drinks they record are fermented or not, this being particularly the case as regards beverages made from palm and from honey.

(The sources on alcoholic beverages in South America are exceedingly numerous and very widely scattered. Among the most important are: Appun, 1870; W. E. Roth, 1924; Karsten, 1920 b, 1926, 1935; Bruman, 1940, for southern Middle America.)

### ILEX (MATÉ, GUAYUSA)

From the leaves of various wild and cultivated species of the genus *Ilex* (*I. paraguariensis*, *I.* spp.; active principle, caffeine) are prepared the stimulants maté (herva maté, yerba maté, caá guazú, Paraguay tea) and guayusa. There are two main centers of distribution: the maté center in the Paraguay region, and the guayusa center in the Montaña.

At the time of first White contact, maté appears from our sources to have been in use chiefly or only by the *Guaraní* of the region watered by the Paraná, Paraguay, and Uruguay (map 10), and solely as an herbal curative and by shamans as a means of entering into communication with spirits. Later it came into more general use as a mild stimulant among the neighboring tribes (*Charrua*, *Caingang*, and *Chamacoco* specifically mentioned), and especially after the beginning of the 17th century among the Whites of the region, from whom its use spread through Southern Brazil, Paraguay, Uruguay, Argentina, Bolivia, Chile, and part of Perú. At the present time, maté is drunk, according to Lewin's estimate (1931, p. 276), by about 15 million people, as a pleasurable beverage and a mild nerve tonic and muscular stimulant.

The beverage is ordinarily made by putting a portion of the powdered leaves of the Ilex into a little cold water, and afterward adding boiling water. It was earlier drunk through a narrow wooden pipe or a slender reed; the *Chamacoco* used a bird-bone pipe with a woven fiber strainer on the distal end. It is at present more commonly drunk through a metal pipe with a globular strainer at the end.

Guayusa is specifically recorded for the *Jívaro*, *Záparo*, *Quijo*, *Canelo*, *Candoshi*, *Aguano*, *Panobo*, and 18th-century *Pinche*, of the Montaña region (map 10) but may be more widespread in the area. Our sources are silent on early use of *Ilex* beverages among the peoples of the Andean Highlands and west thereof.

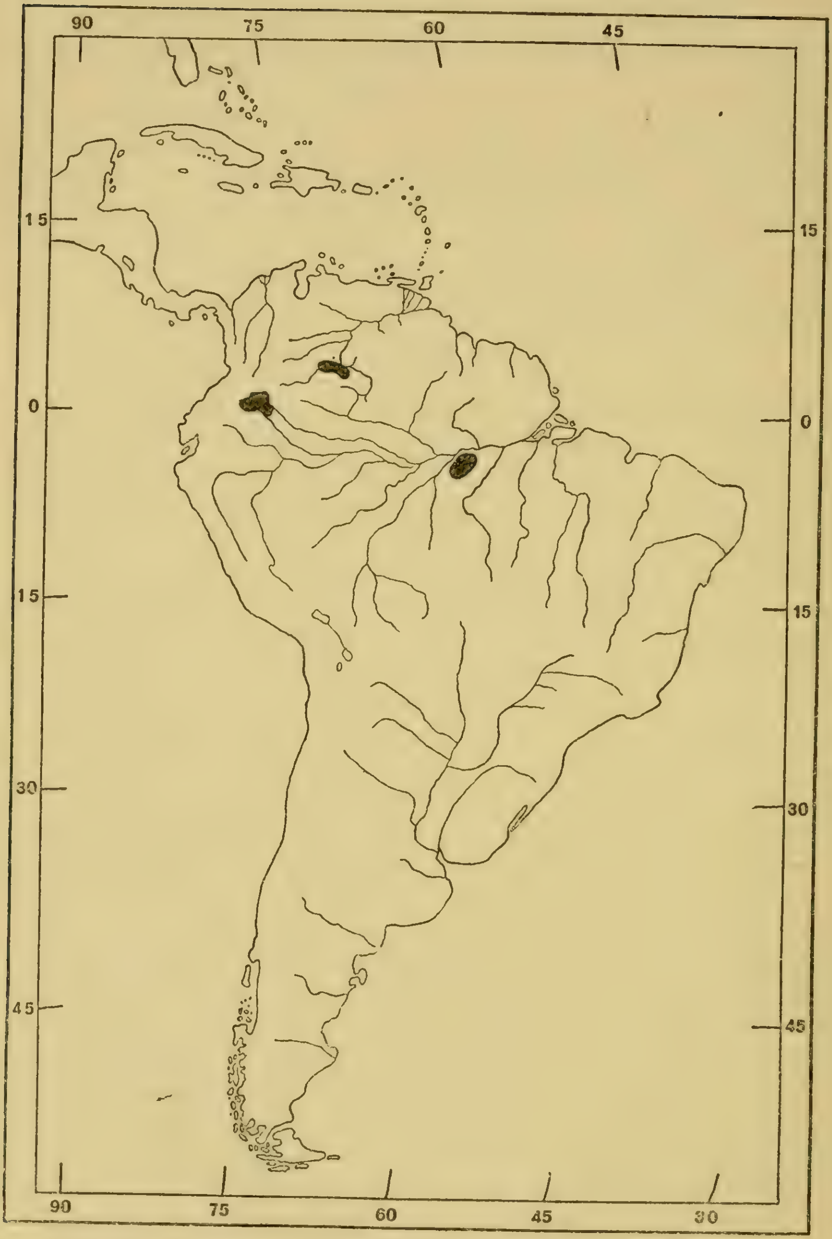
Our most detailed information on the purposes for which guayusa, the boiled infusion of leaves of *Ilex* spp., is used in the Montaña comes from the *Jívaro* (Villavicencio, 1858; Spruce, 1908; Karsten, 1920 a, 1920 b, 1935). The *Jívaro* men and women daily drink it and give it to their children the first thing in the morning after arising, to induce vomiting and thus to cleanse and fortify the body—as is done with other liquid emetics for the same purposes among other tribes (e. g., *Taulipáng*, *Yecuana*) of northern South America. Guayusa is believed by the *Jívaro* to confer strength and swiftness, especially on the hunter—and for the same reason is also given to hunting dogs, as *Piptadenia* is given among the *Piro* and *Catawishi*—and to bring dreams regarding hunting luck. It likewise enters largely into the *Jívaro* religiously colored victory and other feasts. The 18th-century *Pinche* drank guayusa at dances and took it with them when they went away from home for some days (Veigl, 1785, p. 46).

### PAULLINIA (YOCO, GUARANÁ)

From wild and cultivated lianas of the genus *Paullinia* (*P. yoco*, *P. cupana*, *P. sorbilis*, and perhaps others: Schultes, 1942) are prepared stimulant and medicinal beverages (yoco, guaraná, cupána) with a high caffein content—in guaraná usually 3 to 4 percent, occasionally as high as 6 percent.

Yoco, recorded to date only for the *Inga*, *Siona*, *Cofán*, and *Coreguaje* of the Putumayo-Aguarico-Caquetá area in southern Colombia and adjacent parts of Ecuador and Perú (map 12), is prepared from *Paullinia yoco* and perhaps also from *Paullinia pterophylla*. The stem is cut into pieces 1 to 3 feet long, and the epidermis, cortex, and phloem are rasped. The scrapings thus obtained are squeezed to express the caffein-bearing sap into cold water, the rasped tissues being then discarded. The liquid, of a cloudy milky-white or light chocolate-brown color, is drunk cold. The beverage, which is taken early every morning, allays hunger and supplies muscular stimulation. It is also used medicinally as a febrifuge and as a curative for a bilious disease (Schultes, 1942).

Guaraná is recorded specifically for only a few tribes (such as the 17th-century *Andiraz*, the *Maué*, *Piapoco*, and the Indians of Yavita on the Atabapo River of southern Venezuela) (map 12), but is apparently of somewhat more widespread use among the Indians of the Amazon and Río Negro valleys (Spruce, 1908, 2:450–451). It is prepared from *Paullinia cupana* (*P. sorbilis*), normally a twining plant, but often kept pruned in cultivation to the size of a currant bush. The seeds are scraped or ground, mixed with cassava flour, and kneaded to a paste, which on drying becomes the hard saffron-yellow or brown pasta guaraná (guaraná paste). The beverage, of bitter taste, is made by scraping the paste and dissolving the powder in cold or hot water. It is taken, commonly in the morning, as a mild stimulant. Bettendorf (1910, p. 37) recorded that the *Andiraz* Indians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MAP 12.—Distribution of *Paullinia* beverages: yoco and guaraná.

believed it gave them strength to hunt long without feeling the pangs of hunger.

Around the middle of the last century, the *Maué* had a sort of monopoly on the production of guaraná, at least in their area, and exported it widely.

Our sparse source information on yoco and guaraná contains no reference, so far as the writer has been able to discover, to any shamanistic or other magico-religious use of these beverages.

## CACAO

Cacao (*Theobroma cacao;* alkaloid, theobromin) grows wild in many parts of northern South America, as along the Amazon, and is at present widely cultivated there by Whites and by some Indians. So far, however, as our historical records go, it was not used anywhere on the South American continent south of Panamá before the coming of the Europeans, and no seeds, pods, or representations of cacoa have been found in Peruvian or other archeological sites.

But in southern Middle America it has long been used as food and drink by the Indians from Honduras (*Mosquito-Sumo*) to Panamá and the Colombian border (*Cuna*), and perhaps goes back, in part at least of the area, to pre-Hispanic times. The burning of cacao nibs as incense in braziers enters prominently into the magico-religious practices of the *Cuna* of Panamá (Nordenskiöld, 1938, pp. 321, 364, 577, and passim).

## COCA

The leaves of *Erythroxylon coca* are the basis of the stimulant, coca (from *Quechua* cuca, coca; ipadú in Brazil; hay, hayo, jaya in Colombia and Venezuela). The coca plant, a shrub from about 3 up to 12 feet (0.9–3.6 m.) high, grows wild in warm ravines in sub-Andean Perú, in Bolivia, and in Brazil, and is widely cultivated in and near its general range by both Indians and Whites, particularly in the valleys of the eastern slope of the Bolivian and Peruvian Cordillera.

Archeological evidence indicates that aboriginal use of coca goes well back into pre-Contact times. Bundles of coca leaves, woven bags containing the leaves, gourds holding lime and ash, and spatulae have been found frequently in graves in Perú and as far south on the coast as Arica in northernmost Chile.

Our early historical sources report coca chewing and/or ritual use of coca leaves as prevalent: in Middle America, among the *Nicarao* of the Pacific Coast of Nicaragua, and perhaps in the Veragua region of western Panamá; in South America from the *Cumaná* area of Venezuela, the Goajira Peninsula, and Isthmus of Panamá through the Andean Sierra and sub-Sierra of Colombia, Ecuador, and Perú to northern Chile. Coca chewing is not found among the modern *Quechua*-speaking Indians of the Sierra of Ecuador. The evidence for the use of coca in the Antilles in early Contact times seems very tenuous. (Cf. discussion by Lovén, 1935, pp. 398–400.)

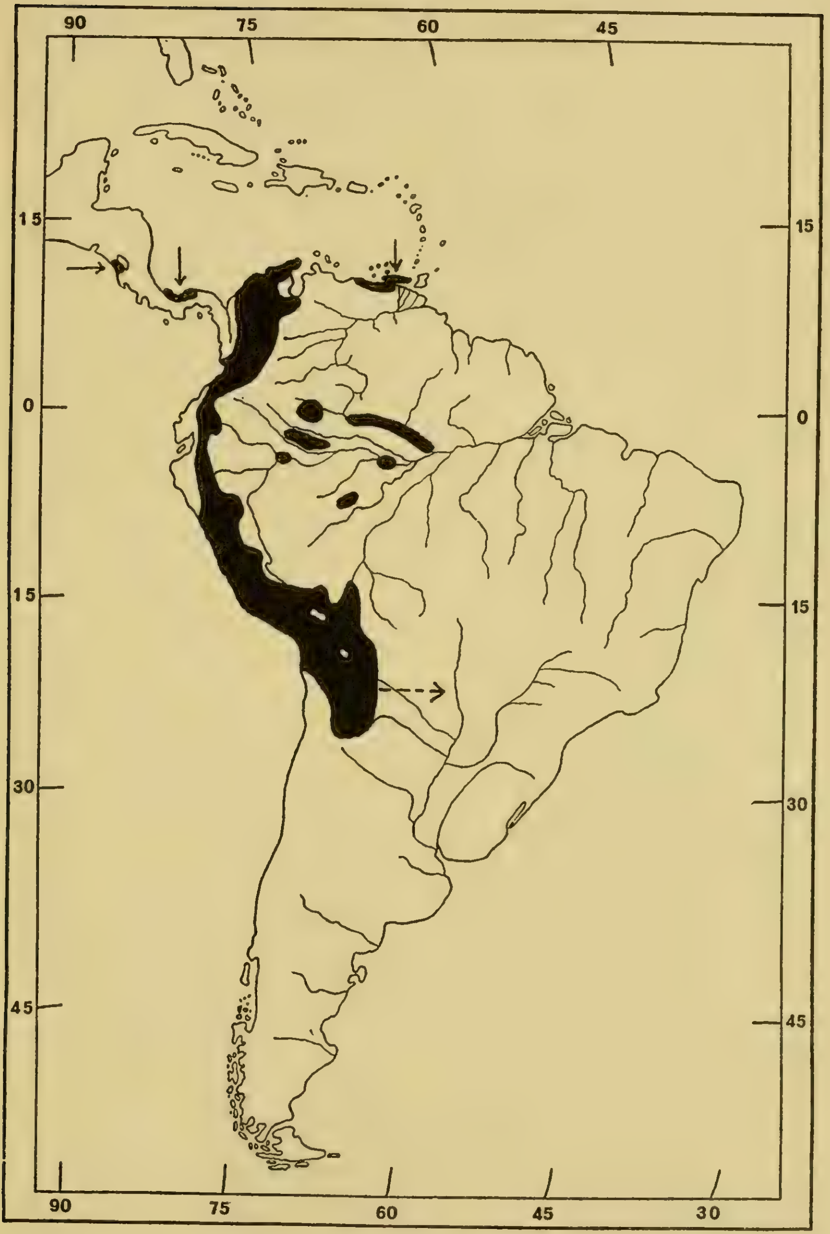
Our more recent sources, particularly those of the last hundred years, reveal two important extra-Sierral extensions of aboriginal coca use: one in the equatorial belt, which includes many of the tribes of the northern affluents of the Amazon, with one far eastern outpost in Spruce's day, a century ago, at the mouth of the Río Negro; a second, in the south, which includes a certain number of southwestern Brazilian, western Bolivian, and northwestern Argentine tribes in touch with the *Quechua* and *Aymara*, and a very recent further extension by Indian sugar-factory laborers well across the Chaco nearly to the Paraguay (map 13). (For listing of majority of coca-chewing peoples, see Bolinder, 1925, pp. 82–93, with references; cf. also: Ernst, 1890; Tessmann, 1930; Nordenskiöld, 1920; Lewin, 1931.)

Methods of preparation and use of coca as a stimulant differed from region to region. In parts at least of Colombia, Ecuador, and the North Coast, the dried leaves were chewed without addition of lime or ash.

Throughout most of the Andean area from Colombia to South Perú, Bolivia, and North Chile, the leaves are dried and kept separately from the lime or ash in a small pouch or woven bag (chuspa), the limy substance (llicta, llista, llipta) being carried in a small gourd (poporo), with a thin stick or spatula to transfer the alkali to the mouth. North of about Cerro de Pasco (Central Perú, around lat. 11° S.), the llicta consists of lime from calcined snail or other shells; south thereof, of ash from burnt quinoa stems or other plants, and sometimes mixed with potato meal. Cobo also mentioned ash from bones and "piedras" (limestone?). The coca chewer first puts the dried leaves in his mouth, and after they are sufficiently moistened with saliva and worked into a quid, he wets the end of the stick or spatula, dips it into the lime or ash in his poporo, and transfers the alkali to his mouth. The stick may be replaced by a small spoon. The juice is swallowed, not the leaves. From time to time he adds leaves and lime or ash. The early Peruvians also used a decoction of coca leaves medicinally (Cobo, 1890–93, 1:476–477), as the modern *Panobo* do to lighten the body.

In most of the lowland Amazonian area where coca is used, the leaves are dried and pounded to fine powder, which is then mixed with plant ash, and in some regions with cassava flour as well. This ready-made mixture is put in the mouth to be moistened with saliva and slowly swallowed.

Shell lime is mostly lime with only traces of potash; wood ash ordinarily contains an average of about 25 to 30 percent of lime and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Map 13.—Area of coca use.

0.5 to 3 percent of potash. In the presence of strong alkalis like lime or potash, alkaloids occurring in combination in the coca leaves are liberated. Whether the fatigue-dispelling effects of coca as used by the South American Indians are due to liberation of the cocaine content or of other substances in the leaves is not certain (Blake, 1943). In any case, coca chewing should not be confused with cocaine addiction.

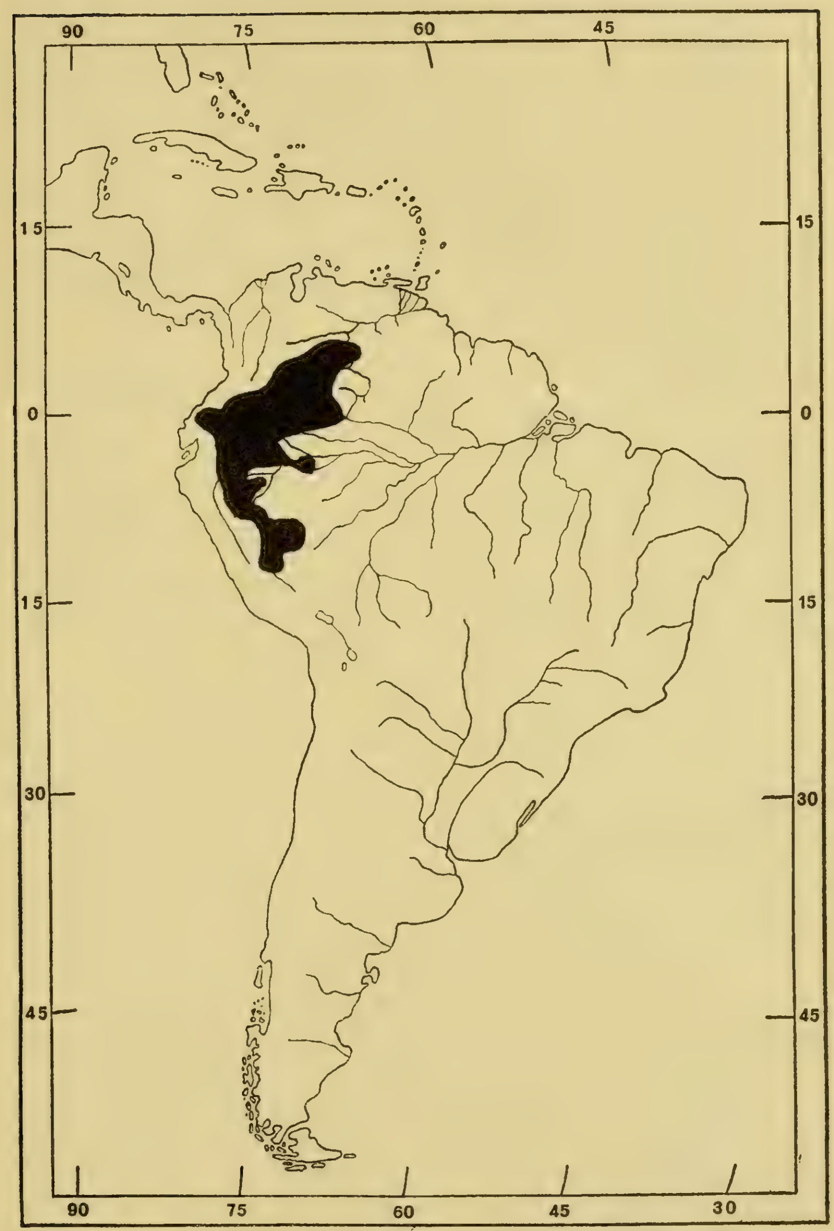
The chief physiological effects of coca chewing are the allaying of thirst and hunger and the freeing of bodily energy for prolonged physical exertion, especially at high altitudes, "presumably by making foods already stored in the body available for conversion into man-pounds" (Blake, 1943, p. 116).

Coca chewing is indulged in distinctly as a stimulant, to induce the above-mentioned effects. It is not to any appreciable extent an escape medium. Nor is it used alone and at present, at least, by shamans to produce trance. It enters, however, and, according to Polo de Ondegardo and Montesinos, did enter considerably into Andean shamanistic divination and other practices. The leaves are thrown by the modern *Aymara* like cards to discover lost or stolen property; divination was also practiced in the Cuzco region by spitting coca juice on the hand. Coca leaves were offered by the Peruvians to certain birds to have them give knowledge of the future and wreak evil on enemies. Coca leaves were very common sacrificial offerings among the *Chibcha* and *Quechua*, as they are among the modern *Quechua*, *Aymara*, and *Uro-Chipaya*. Among the ancient *Chibcha* and Peruvians they were also burned as incense. Coca appears to enter very slightly into the magico-religious culture of the forest Indians to the east of the Sierra—an indication perhaps of more recent introduction into this area from the western Highlands.

As a general rule coca-chewing peoples are not habitual tobacco-users, but there are exceptions, such as the *Omagua*. More commonly, coca chewing is a masculine rather than a feminine habit, but here too there are exceptions, as among the *Aymara* and in parts of the forested region. Among many peoples, as, for example, the *Ica*, *Moguex*, and *Páez* of Colombia, coca is chewed little or not at all by women.

## BANISTERIOPSIS

From the stem of plants of the genus *Banisteriopsis* (*B. inebrians*, *B. caapi*, *B. quitensis:* cf. Morton, 1931; chief active elements, the alkaloids banisterin, yagein, yagenin) are prepared narcotic beverages called yagé, ayahuasca, hayahuasca, hayac-huasca, cadána, natéma, iyona, nepe, pinde, honi. It is possible that some of the beverages recorded in our sources under these names were from plants other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MAP 14.—Area of *Banisteriopsis* preparations.

than *Banisteriopsis*, since in many instances scientific botanical identification was not made.

The main area of distribution of *Banisteriopsis* narcotics is along the affluents of the upper Orinoco and of the upper Amazon (map 14). Their use is specifically recorded among: the *Guahibo* and, according to Spruce, most of the tribes of the Meta, Vichada, Guaviare, Sipapo, and intervening rivers that flow into the middle and upper Orinoco; the *Yecuaná* of the upper Ventuari; most (about 40 in all) of the peoples of the Uaupés and the Tiquié, the upper Caquetá, Apáporis and Putumayo, the Napo, the Pastaza, the middle Huallaga, the upper Ucayali, and the far upper Juruá Rivers; the *Colorado* and *Cayapa* of western Ecuador. (Fairly full listing in: Spruce, 1908; Reinburg, 1921; Tessmann, 1930; Pardal, 1937.)

The plant is cultivated over most of the area but is also gathered wild. On the Orinoco affluents the dried stem was chewed, but both there and elsewhere *Banisteriopsis* is usually taken as a beverage. Sections of the stem are pounded in water, and the strained liquid is taken either crude or after being boiled and let cool. Often leaves, young shoots, or roots of other plants—*Datura* sp., *Haemadictyon* sp. and/or tobacco water—are added. The beverage is of a brownish-green color, with a bitter taste. In many tribes it is drunk only rarely or not at all by the women; in Ecuador both women and young boys drink it.

The more common effects are: at first vomiting, even among seasoned users; then trembling and giddiness (sometimes, according to Spruce and Villavicencio, accompanied by violent and reckless fury, though this is denied or questioned by Karsten and Reinburg); next exhaustion and profound sleep, before and during which sleep occur gorgeous and/or terrifying visions of marked clearness that may have a bluish aureole and that are vividly remembered after awakening; clairvoyance; communication during narcosis with the spirit world. (Cf.: Reinburg, 1921; Karsten, 1920 b, 1935; Morton, 1931.)

Among many tribes *Banisteriopsis* narcotics are taken for their exciting and pleasurable effects, frequently on the occasion of drinking sprees; among others, solely by shamans or in connection with shamanistic or other magico-religious rites. Shamans drink them to enter into communication with manistic or other spirits, to learn the cause and cure of illness, the whereabouts of enemies, the future, the right decision in disputes, and so forth, and to bewitch enemies. Among the *Záparo*, these beverages are drunk by the men before war, hunting, rubber gathering, and other expeditions; among the *Jívaro*, at the feast of dogs, victory feasts, special natéma feasts, and so forth. (Cf. especially: Karsten, 1935; Tessmann, 1930; Calella, 1944.)

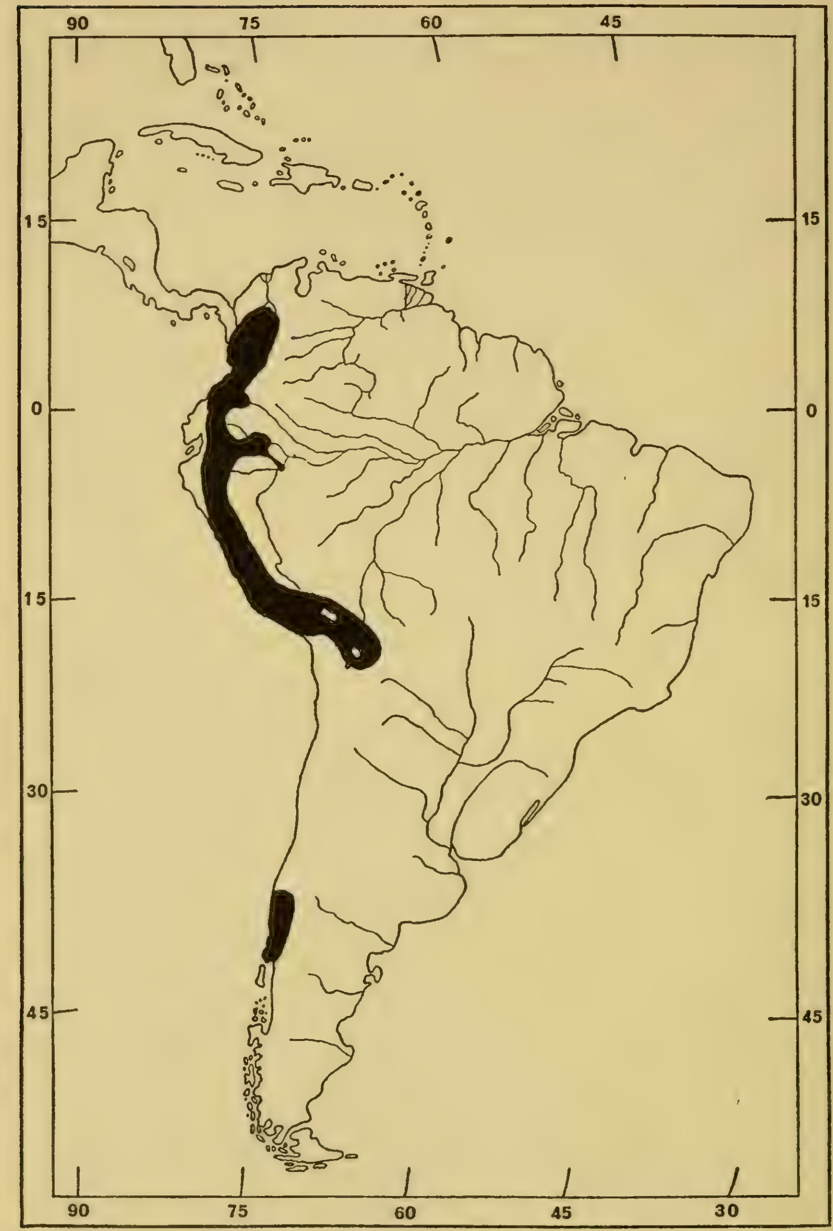
## DATURA

Narcotic preparations (floripondio, campanilla, borrachero, yakoborrachera, huacacachu, yerba de huaca, huanto, huantuc, chámico, miaya, maícoa, maikoma, tonga, peji, isshiona) are made from the bark, seeds, and leaves of various wild and cultivated species of the genus *Datura* (*D. stramonium*, *D. arborea*, *D. candida*, *D. rosei;* active elements, chiefly hyoscyamin, scopolamin, and atropin).

So far as our records go, these *Datura* preparations have an exclusively western distribution in aboriginal South America—along the Andean and Pacific fringe of the continent from Colombia to southern Perú and in southern Middle Chile (map 15). They are specifically reported for the *Chibcha* and *Chocó* of Colombia, the *Quechua* of Ecuador, Perú, and Bolivia, and the *Mapuche-Huilliche* of Chile, and for the *Záparo*, *Jívaro*, *Canelo*, *Inga* of Mocoa, *Siona*, *Pioje*, and *Omagua* of the Montaña. Some of the "brujos" among the Indians of the Ecuador Sierra have recently been taking professional lessons from *Jívaro* shamans and have introduced or reintroduced *Datura* into Sierral practice (Disselhoff, 1939). Preparation, use, and purpose differ appreciably from people to people.

Among both the *Mapuche-Huilliche* and the *Jívaro*, *Datura* is administered as a correctional measure of last resort to very unruly children: among the former, as a mixture of crushed *Datura* seeds and parched maize, to produce partial intoxication, in which state the children are lectured; among the latter, in liquid form to boys after a 2-day fast in order that the spirits of their forefathers may properly admonish them in the ensuing dreams and visions. The pre-Contact *Chibcha* of the middle Magdalena gave potions of *Datura* and tobacco leaves in chicha to women and slaves to deaden their senses before burial alive with their dead husbands and masters (Castellanos, 1886–87, 1: 65–66). In the early 19th century, the Indians of the Peruvian Highlands used to give *Datura* sap in chicha to women as an aphrodisiac (Tschudi, 1846, 2: 23).

Among the *Chibcha*, *Chocó*, *Quechua*, *Jívaro*, *Záparo*, *Canelo*, and *Siona*, and probably among the *Inga*, *Piojé*, and *Omagua*—but not among the *Mapuche-Huilliche*—*Datura* preparations, usually in the form of a drink, play or played an important role in shamanistic and other magico-religious rites and practices. In some cases, as among the *Chibcha* of Colombia and the *Quechua* of Perú and Bolivia (Vázquez de Espinosa, 1942, p. 658), the seeds were ground and taken as an infusion or in chicha; in others, as among the *Jívaro*, the drink is simply the juice, of light green color and insipid taste, squeezed by hand from the rind scratched off the stem. These beverages, taken in strength as they commonly are taken, induce marked initial confusion


90
75
60
45
15
0
15
30
45
15
0
15
30
45
90
75
60
45
30

MAP 15.—Area of *Datura* preparations.

and excitation, and often such violent fury that the takers have to be watched or held; this stage is followed by profound sleep with visions and spirit visitations through which the shaman or lay person acquires knowledge of the originator and the cure of maladies, the location of enemies or of treasure, the identity of thieves, the outcome of prospective war expeditions, and so forth. Among the *Jívaro* at least, *Datura* drugs—much more powerful than *Banisteriopsis* ones—were taken mostly by male shamans, candidates for shamanship, youths at initiation, and warriors; rarely by women. (Karsten, 1920 b, 1935; Safford, 1917 b, 1922; Reinburg, 1921; Tschudi, 1846; Lewin, 1931; Pardal, 1937.)

## MISCELLANEOUS STIMULANTS AND NARCOTICS

Among the less important and more narrowly localized excitants and stimulants are: the *Mojo* decoction made from marari, a plant described as similar to our verbena, and taken by shamans when they had to interview the spirits (Métraux, 1943 a, pp. 15–16); the *Macushí* crushed-pepper infusion poured into the nostrils as a stimulant, excitant, and headache cure (Roth, W. E., 1924, p. 247); the potent *Yurimagua* tree-fungus beverage (Chantre y Herrera, 1901, p. 85); the *Malalí* preparation of an unidentified dried larva, bicho de taquara, the eating of which was reported to bring long-lasting ecstatic sleep with marvellous dreams (Saint-Hilaire, 1830–33, 1:432–433); the vision-producing yurema-root infusion of the *Cariri* and *Pancararú*. To judge from many hints scattered through our sources, there is good probability that more meticulous field research and more exact scientific identification and analysis of specimens will reveal other aboriginal stimulants and narcotics, in addition to those dealt with in the present article.

## CONCLUDING GENERALIZATIONS

In South American Indian life, aboriginal stimulants and narcotics are confined almost exclusively to the horticultural peoples, and one or more such stimulants and/or narcotics are in use among practically all these peoples. Conversely, stimulants and narcotics of all kinds are, or in earlier post-Contact days were, completely lacking among the southern nonhorticultural peoples from the southern and perhaps the northern limits of the Pampa to Cape Horn, as also they are or until recent times were from a large and fairly continuous block of peoples (*Ge* and other non-*Tupí*), some horticultural, some nonhorticultural, of Eastern and Southern Brazil.

Of the various aboriginal South American stimulants and narcotics, alcoholic beverages and tobacco have the widest distribution, being practically coterminous with gardening. Coca, *Datura*, and guayusa are found mostly in the Andean and Montaña regions; *Banisteriopsis*, mostly in the Montaña; maté, mostly in the Paraguay section; cocoa, in Middle America as far south as but not beyond the *Cuna* of Panamá. *Piptadenia* and *Paullinia* have much more scattered and broken distributions.

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# RELIGION AND SHAMANISM

By Alfred Métraux

## INTRODUCTION

The great diversity of religious beliefs and practices precludes the presentation here of an all embracing picture of South American religions. Clear understanding of the various South American cults may be gained only from an analysis of representative religious systems in the several areas; this task was achieved in the preceding volumes. The purpose of the present chapter is to examine certain basic concepts like the idea of a Supreme Being and beliefs about gods, spirits, demons, and ghosts; to describe certain religious practices like sacrifice, prayer, and shamanism; and to indicate their distribution on the continent. As far as possible, we shall present the principal similarities and differences between the more developed religions and those usually considered to be more primitive.

The difficulties of adequately summarizing the fundamental characteristics of religious life in South America are considerably increased by the poor quality of the source materials at our disposal. The picture of the Andean religions given by the ancient chroniclers is most unsatisfactory because it is both incomplete and twisted by the Catholic and classical viewpoint of our main authorities. In the rest of the continent much of our information is marred by hasty generalizations or by the accumulation of trifling and unrelated details. There are few groups whose religion may be said to be approximately well recorded, and even for those with the best documentation we have to reckon with gaps and obscurities.

## THE HIGH GODS

The tradition of a Creator or Great Ancestor, who made the world and mankind and who set men on their way to civilization, is probably general throughout South America. Because of the contrast between the loftiness of this figure and the insignificance of his active part in religion, which has often been pointed out, there is a tendency to consider him to be no more than a mythical character. Nevertheless, even though the Creator or Culture Hero usually keeps aloof from human affairs, his remoteness is less absolute than our imperfect knowledge of the Indian religious systems may lead us to suppose. Among certain tribes like the *Tupinamba* and *Guarayú* there are traces of a cult dedicated to the Creator, and a closer examination of the ceremonies of other tribes may well show that the Indians sometimes turn to him in their prayers and expect his assistance. The Great Ancestor generally is the ruler of the Land of the Dead and in this capacity is associated with funerary practices and beliefs about the afterworld (*Tembé*, *Guarayú*, etc.). The Creator often is described as a Transformer and, as a rule, he is the lawgiver and instructor of the young humanity. After he has accomplished his tasks, he wanders westward to the end of the world, where he rules over the shadows.

An Originator and Civilizer of this kind could easily become a Supreme Being or a High God; this change seems actually to have taken place in ancient Perú. The fragmentary myths about the God Viracocha—whose full name, Con-Ticci-Viracocha-pachayachachic, means something like "the ancient foundation, the lord and instructor of the world"—represent him with all the typical characteristics of a Creator-Transformer-Civilizer. According to the myths, he made the earth, the sky, the stars, and mankind; destroyed the first people by a flood and created new men; wandered across Perú establishing the social and moral order and instructing mankind in many arts; and gave men their staple food plants and taught them the secrets of cultivation. In addition, he was a great transformer who changed mountains into plains and valleys into mountains and turned men into stones. We may well surmise that these are the deeds of the original Culture Hero of the *Quechua* or some other Andean people who, in the course of time and through the speculations of priests, was elevated to the position of a Supreme Deity, greater than all the other gods, even the powerful Sun God. Viracocha was worshiped in special temples by sacrifice and prayer and was represented in anthropomorphic images. Because of his exalted position and the comparatively recent emergence of his cult, he was less popular with the multitude than were the Sun deity and other lesser gods, but his worship was well established in the 16th century, and there can be no doubt but that he was a functioning god.

Con or Coniraya, who was worshiped by the Coastal people of Perú, has been associated or compared with Viracocha. This deity, about whom few traditions have survived, was a solar god and had many attributes of a Creator, a Transformer, and a Culture Hero. Pachacamac, the god of the famous temple, may have belonged to the same category of supernaturals.

Modern *Araucanians* celebrated the cult of a Supreme Being whom they addressed as "Master of men," "Master of the land," "Father," "King Father," or "Blue (sky) King Father." He not only was the creator, the giver of life and fecundity to men, animals, and plants, but also was directly concerned with the welfare of mankind. Unfortunately, it is impossible to decide whether this conception of a High God was pre-European or came of the *Araucanians*' long contact with White people. Our knowledge about this Supreme God's cult does not go back further than 150 years. The many close analogies between *Araucanian* beliefs and customs and those of the people of Perú suggest the early existence of a figure of a Creator and Culture Hero who, in the course of years, was refashioned into a Supreme Being, probably under Christian influence.

Belief in a High God seems to have been one of the most fundamental concepts of the religion of the *Ona*, *Yahgan*, and *Alacaluf*, who are considered to be the most primitive tribes in South America. The evidence about the Fuegian Supreme Being was gathered from 1920 to 1926 by Father Gusinde and Father Koppers, both disciples of Father Wilhelm Schmidt, so that most of our information about the religion of these Indians was obtained when they had long been subject to White influence and when both the *Yahgan* and *Ona* were on the verge of extinction. Gusinde and Koppers undoubtedly are right in insisting that the Fuegian belief in a High God was independent of any Christian religious teaching, but many details and traditions concerning him may have been lost and the data gleaned at the last moment perhaps give us the illusion of a more philosophical and abstract deity than he actually was.

In the light of our present knowledge, the High God of the Fuegian tribes cannot be regarded as a deified Creator and Culture Hero, for he has few of the attributes of these mythical characters; in his nature he is closer to the Christian God than to Viracocha and other wandering Transformers and Teachers.

According to Gusinde, the *Ona*, *Yahgan*, and *Alacaluf* believed that the Supreme Being was an invisible spirit without material needs, omniscient and all powerful, who lived in the sky beyond the stars. The *One* called him Temáukl'; the *Yahgan*, "The Old One"; and the *Alacaluf*, Xél'ás, "The Star." The *Ona* avoided the use of his name, preferring to call him "The one who lives in the sky." When praying, the *Yahgan* said, "My father" or called him "The Good One," "The Strong One," or "The Highest One"; when they were angry they spoke of him as "The Murderer in the Sky."

The *Ona* and *Alacaluf* believed that the Supreme God was the creator of the Universe; the *Yahgan* did not specifically regard him as such, though they considered him to be the master and owner of the world and the provider of food. He was endowed with a highly moral nature, and, since he introduced the norms of conduct, he was the custodian of morality and the dispenser of justice. Disease and death were manifestations of his wrath—hence the real or apparent resentment expressed against him when a person died. His good will was gained by living in accordance with the moral code of the tribe. The *Alacaluf* are said to have refrained from any worship because the very perfection of the High God rendered vain every attempt to change his will. The *Yahgan* prayed to him for food and health and thanked him for his favors. The *Ona* offered him morsels of food in a symbolic gesture.

The *Yahgan* High God was more alive and closer to man than was the *Ona* deity, who was somewhat pushed away in a distant and cloudy world.

The distinction between a Creator who is worshiped and, therefore, is part of the religious system and a Creator who is purely a mythological figure is more theoretical than practical. The *Guarayú* prayed to Tamoi, their Great Ancestor, and performed ceremonies in his honor. Although Nanderuvuçú, whose name means "Our Great Father" or "Our Great Grandfather," was typically an idle deity, his existence was not a matter of indifference to the *Apapocuva*, for they believed that one day, as once before, he would destroy the world. They conceived of his abode as a paradise and during the last century made several attempts to go there and live under his law.

The Noma—"Father"—of the *Witoto* is certainly a more abstract figure, who almost appears to be the product of a single brilliant and metaphysical mind. According to the *Witoto* creation myth, he was originated by the "word"; that is to say, by magico-religious formulae and by myths impregnated with magic power. He was the personification of this "word," which he in turn passed on to the first men. As a Culture Hero, he introduced all the religious ceremonies and also cannibalism. His relationship to the *Witoto* religion was not expressed in any form of direct worship, yet he was more than a theological concept, for without him the chants and ceremonies would have been without power. Unless Preuss (1921–23) has overstressed the metaphysical character of this God, he also must be regarded as an embodiment of vegetation.

Among the matrilineal *Cágaba*, the Supreme Being was a goddess whose titles are indicative of her exalted position. She was believed to be the "Mother of all human races, of the world, of animals, fruits, trees, rivers, thunders, the Milky Way, songs, dances, sacred objects, and sanctuaries." Her four sons were the ancestors of mankind. Because she was the source of all things, all ceremonies were performed for her to see. The *Cágaba* asked her to send rain and to grant them abundant harvests.

Less information is available about Eschetewuarha, the goddess of the *Chamacoco*, and for this reason her position within the *Chamacoco* religion is more difficult to ascertain. She was believed to be married to a Great Spirit whom she controlled as she did everything else in the world. The Indians prayed to her for water, for she was the mother of the Osasero birds (the clouds).

Kumana, the great goddess of the *Yaruro*, may have been a deity of the same type as the *Cágaba* "Mother of all things," but because of the fragmentary and contradictory nature of our sources, this cannot be positively ascertained. One informant said, "Everything sprang from Kuma, and everything that the *Yaruro* do was established by her" and "the other gods and culture heroes act according to her law."

The number of High Gods in South America was certainly larger than this summary indicates, but in most cases our information is either scanty or unreliable. Both the nature and the functions of these High Gods require more detailed investigation.

Father Wilhelm Schmidt has stressed repeatedly the analogies between the Supreme God of the Tierra del Fuego Indians and the High Gods of the primitive tribes of California and eastern North America. His parallels probably are as valid as are those established between the deified Culture Heroes of the Andean people and those of Central America.

## THE NOTION OF GOD, DEMON AND SPIRIT

*Inca* religion with its array of gods, its numerous priesthood, and complex ritualism differs vastly from the diffuse and often amorphous animism of the tropical tribes as well as from the simple theism of Tierra del Fuego. The contrast is, however, not so profound as it may appear. On the one hand, only strong animistic beliefs can explain the cults of the countless huacas or minor dieties and fetishes of ancient Perú; on the other hand, some of the nature gods of the *Inca* pantheon crop up here and there among the tribes of the forests.

Throughout South America natural objects and phenomena are personified or are believed to be the abodes or manifestations of supernatural beings. There is, nevertheless, considerable variation in the degree of individualization of these spirits, in their functions, and in the nature of their relationship with people.

In Perú the heavenly bodies, the natural phenomena, and the elements as well as the earth and the sea were conspicuous deities that were worshiped in temples and served by priests. In most of the primitive tribes the same natural objects were either mythological figures without religious significance or were animated by spirits with little individuality. The personification of nature sometimes brings about situations which are difficult to define in terms of our usual notions about religion. For example, among the *Mataco*, Sun was a mythological figure but not a functioning deity, for no prayers were addressed to him and no ceremonies were performed in his honor; yet shamans "visited" him to take advantage of his great knowledge in solving their problems.

Outside of Perú, where Sun was the ancestor and the principal god of the *Inca* dynasty, Sun and Moon were potent deities only in three small *Ge* tribes of Eastern Brazil: the *Apinayé*, the *Sherente*, and the *Canella*. There were also traces of a solar cult among the ancient *Guaraní* and their modern descendants, the *Apapocuva*, but its importance probably was slight.

Although from Tierra del Fuego to the Guiana stars and constellations were visualized as Culture Heroes or mythical animals that had migrated to the sky, the phenomena were deified only in Perú and among the *Sherente*, to whom they appeared in visions as deputies of Sun and Moon. It is possible that the Pleiades were worshiped by the *Guaicuruan* tribes of the Chaco, but we have no details.

The sky never has been personified in South America, but human will and feelings were attributed to it in Chaco mythology when, for instance, the sky changed place with the earth so as not to be soiled by it.

The Thunder God ranked very high in the *Inca* pantheon and survived to modern times under the name of Santiago. In the Chaco and in the Tropical Forest, thunder was attributed either to birds or to spirits. The Thunder Spirit of the ancient *Tupí-Guaraní* of the Brazilian coast underwent a strange metamorphosis after the Discovery. The missionaries, in their search for the notion of a Supreme Being, heard the Indians refer to this sky demon, and raised him to the dignity of a High God. Today Tupan is the name of the Christian God among all the people of Brazil and Paraguay who speak a *Guaraní* dialect; tupan also has taken on the meaning of "sacred."

The Earth-mother is a typical Andean deity whose cult was perhaps more important in the popular religion than that of the Sun or other *Inca* major gods, for it remained almost intact from Ecuador to the Argentine long after most of the gods of the *Inca* pantheon had been forgotten. The cult of the Earth Goddess has been reported among the *Jívaro*, but there she was probably a simple vegetation demon, for only female plants were under her protection.

In Perú the term huaca was applied to everything sacred; in the chronicles it designates the gods, demons, and spirits worshiped by the people of the Empire. Some of these huaca were nature gods adored in the several provinces, but the majority were no more than local spirits or demons that haunted the hills, lakes, rivers, and caves or that animated the countless fetishes worshiped by the lineages and families of the Empire. Without any doubt, these spirits were similar to those that filled the world of the forest Indians, but many assumed the character of gods by becoming the protectors of a large social group that developed a cult around them. The accumulated myths and traditions gave them individuality and increased their prestige. Other spirits, such as the mallcu and samiri of modern *Aymara*, remained simple fetishes—cones or earth and stones that were the custodians of an ayllu and were only dimly conceived of as the receptacles of spirits.

The Guiana Indians regarded rapids, waterfalls, conspicuous mountains, strangely grown trees, and other natural oddities as the abodes of special spirits that bore a distinctive name and incarnated themselves in animals (e. g., water serpents, hawks, caimans, etc.). These localized spirits differ from the Peruvian huaca only in the absence of a regular cult, yet in some cases simple rites were performed in their behalf. For example, before crossing a rapid haunted by a spirit, Indian crews sometimes rubbed red pepper in their eyes to ward off danger.

The Peruvian Indians gave a very secondary place to such vegetation deities as Mother Maize or Mother Potato, for in Perú the fertility of the soil was under the protection of the Sun and especially of the Earth-mother. Nevertheless, plant spirits had a cult and were symbolized by unusually large and oddly shaped ears of corn or tubers. In tropical South America, the Spirit of the Cassava or the Maize, though no more important than other spirits and like them subject to the will of the shamans, nevertheless assumed some of the characteristices of a vegetation god. The *Cashinawa* performed dances to propitiate the Maize Spirit. The Barama *Carib* asked their shamans to consult with the Cassava Spirit about crop prospects; during the interview, the spirit was given manioc beer, a gesture of courtesy that might perhaps be interpreted as an offering.

Among the spirits that tend toward a greater individualization are the supernatural protectors of the animal species usually called the "Father or Mother of such-and-such kind of game or fish." In the myths these spirits are represented as particularly large specimens of the species, and, as a rule, they may take on human form at will. To this category belong Rato, an aquatic monster who, the *Taulipáng* said, was the Father of all fish and water animals, as well as the *Toba* Indians' Soinidi, who was both a water spirit and the protector of the fish. These custodians of the species freely permit the use of their protégées as food, but they do not tolerate their wanton destruction by man, and they punish severely hunters who kill more than they actually need to survive. In some cases, these guardians could be propitiated by prayer and small gifts, but the exercise of moderation and self-restraint was the best way to gain their favor. The notion of a protector of the species was strong in ancient Perú, where the supernatural custodians were identified with constellations to which prayers were addressed. Even in modern times the Indians of the Puna de Atacama believed that the wild herds of vicuña were led by Coquena, a troll who punished men who hunted the vicuña out of greediness.

For purposes of analysis, it is desirable to differentiate wherever possible between spirits that are individualized and those that are not. The term "demon" should be applied only to a spirit that may be defined as an individualized supernatural being that is unique of its kind or is strictly localized and distinguished by a specific name. The term "spirit," on the other hand, should be reserved for the anonymous members of a collectivity of supernatural beings. So, for instance, the *Taulipáng* serpent monster, Rato, must be regarded as a demon, for, even though he may appear in many places, he has a definite personality and never merges with other spirits. Similarly, the *Palicur* Kamũbalu, who is the genius of a mountain, must also be defined as a demon to distinguish him from the swarming spirits that often haunt special sites.

Demons and spirits alike could be summoned by shamans, but since demons generally were more clearly conceived, their behavior generally conformed closely with the traditional ideas maintained about them by the Indians.

Some tribes themselves attempted to classify supernatural beings into categories. The Barama *Carib* based their classification in part on the favorite abode of the spirits; they had spirits of the air, water, creeks, rivers, and hills. The last category was in part geographical and in part functional, for the mauari were both the spirits of the hills and of disease. Each category of spirits was led by a chief who bore toward his group the same relationship that a human headman did toward his family and descendents. This classification was not exhaustive, since it omitted the cassava spirits, the tree spirits, the gnomes, and lutins.

The spirit protagonists of most *Witoto* myths were distinguished by epithets that defined their nature. Thus, the muinane were the people of the past, the hunessai the people of the waters and of plants associated with fish, and the rigai were the spirits of the air, that is to say, of birds and insects.

It is no less difficult to draw the line between spirits and ghosts than it is to distinguish a spirit from a god. The Indians themselves did not always clearly differentiate them. Thus, the *Taulipáng* applied the name "mauari" to the spirits of the mountains, the rivers, and the lakes, to the members of the Rato family, and also to the ghosts of certain dead. The soul of a shaman that left its body became a mauari. Among the same people, olazan meant both ghost and an evil spirit that haunted the living and caused eclipses.

In *Witoto*, the word hanai, which means mysterious, not to be apprehended by the senses, served to designate not only ghosts but also spirits properly speaking as well as magic trees, mythical animals, and some nocturnal animals. The *Shipaya* used only one word, "awa," for ghosts, bad spirits, and mythical monsters. Many Guiana Indians believed that ghosts could finally become spirits.

The distinction between spirits and ghosts was, however, of vital importance in *Bororo* religion. The bope were uncreated nature spirits that lived in the 10 skies of the Universe and were responsible for natural phenomena. They had claims on several foods which could not be eaten without a special ceremony, and they maintained a relationship with a special category of shamans, the bari. Ghosts, on the other hand, lived in special villages and incarnated themselves in animals. They were invoked during certain ceremonies—at the baptism of a child, at initiation rites, and at funerals—and they were served by a different category of shamans, the aroettaware. Similarly, the *Ona* insisted that the forest spirits, though very much like ghosts, were very different from them.

Encounters between spirits and ordinary folk tended to be dangerous, for many of them were sanguinary monsters, eager to kill, and some even had strong cannibalistic inclinations. Others were simply mischievous and delighted in playing tricks, such as causing their victims to lose their way in the forest. Intercourse with a spirit almost always had evil consequences, and could even be fatal to the human partner.

Certain spirits, like the aña or azan of *Tupí* and *Carib* folklore, played the same part in Indian folklore that ogres do in ours; they were cruel and mischievous, but easily deceived and turned to ridicule.

Two bush spirits of the ancient *Tupí* tribes are still popular among the caboclo population of modern Brazil. The most colorful is Curupira, who is described as a small man who walks with upturned feet, and who is still greatly feared by country people. He is the protector of game animals and is generous to those who help him, but punishes severely those who are rude to him. The other spirit, Yurupari, is a real ogre; his name has been used to designate all kinds of demons and spirits worshipped or feared by many non-*Tupí* tribes of the Guianas and the Amazon.

Insight into South American Indians' conception of spirits may be gained from an analysis of their folklore. In these tales a spirit representing an animal or vegetal species may take on human form, but, though he seems identical to any Indian, his true nature is revealed in some physical peculiarity or some special skill or habit. Indeed, spirits in general are visualized as having a human appearance with some monstrous characteristic; they may be hairy, or they may have protruding eyebrows or two heads; they may have no articulation at the knees, or they may be linked together like Siamese twins. Sometimes spirits look like skeletons or skulls. These supernatural beings are wont to assume the shape of persons closely related to their victims, but, as a rule, they may be recognized by some sign, such as the lack of a big toe (Guiana). The approach of a spirit generally is announced by peculiar whistlings or, at night, by cracking noises, but often these warnings come too late.

Spirits often live in villages in countries of their own located on mountains or under water.

Indian folklore is greatly concerned with the adventures of men who meet spirits. Sometimes the spirits are benevolent and helpful. Among them are spirits who marry human beings, but even when they establish personal relationship with a man or woman, the spirits remain volatile and touchy. A slur or the violation of a taboo may rouse their resentment and induce them to break their human bond. Sometimes spirits adopt a man or woman whom they change into a spirit.

Spirits are mortal and are exposed to dangers of various kinds. Guiana folklore has many tales about men who rescued spirits from disaster and who were rewarded by good luck in hunting and fishing.

### GUARDIAN SPIRITS

Shamans derived their power from their association with spirits whom they could summon at will to assist them in their many functions. As a rule, ordinary men did not enjoy any companionship with the supernaturals and, therefore, were obliged to resort to shamans when they needed the spirits' assistance. Nevertheless, the notion of the guardian spirit is not entirely lacking in South America; some references occur in the literature, but apparently the concept never was so clearly defined as among North American Indians.

The best instance of the quest for a guardian spirit in the North American manner occurs among the *Charrua* of Uruguay.

> Some men went on top of a solitary hill where there was a pile of stones to fast in order to find a companion. There they inflicted on themselves many wounds and suffered a rigorous penance until in their mind they saw a living being whom they invoked in times of peril as their guardian angel. [Haedo, 1937, p. 348.]

*Witoto* myths collected by Preuss contain frequent allusions to protecting animal spirits captured during a hunting party. They advised their master when he was in danger and ran errands for him. There is also an allusion to a guardian spirit in a *Taulipáng* myth in which a mutilated man sends his spirit in the guise of a bird to warn his wife (Koch-Grünberg, 1923 a, 3:185).

A statement by Rochefort about the beliefs of the *Island Carib* may be construed as a reference to guardian spirits:

> They believe that these good spirits, or gods, are many and every person believes that among them he has one all to himself; this is his particular spirit, his own familiar. [Rochefort, 1658.]

Yet spirits were invoked only through shamans, so that it seems these familiars were not guardian spirits in the strict sense of the word.

Every *Yahgan* was under the protection of a diminutive spirit assigned to him at his birth by a shaman.

The notion of the guardian spirit may perhaps throw some light on the nature of the mystic relationship between the *Inca* and his Wauki, or supernatural guardian, with whom he was united by a fraternal bond. The supernatural brother was represented by a statue. Still, there is little evidence that the belief in a personal guardian was widespread in Perú and even less that it was the soul of some ayllu ancestor, as Cunow (1937, p. 191) surmises.

### GHOSTS AND THE CULT OF THE DEAD

Everywhere in South America funeral rites expressed the desire of the living to placate the dead, to prevent their return, or to facilitate their journey to the other world. More rarely these practices developed into a cult of the dead in the restricted sense of the word, that is to say, into a worship of the souls of the dead because they directly affected the welfare of their descendents.

Worship of the dead was an important component of the religions of ancient Perú. There the ancestral mummies were attended by priests and were offered sacrifices; during certain feasts they were taken on processions. A feast celebrated in the month of October in honor of the dead of the group was later assimilated to All Saints' Day and is still observed by the Highland Indians of Perú and Bolivia. On this day the dead returned to receive offerings of food and drink.[1]

The care with which the Guiana and Amazonian Indians (*Carib*, *Mundurucú*, *Apiacá*, *Yuruna*, *Ipurina*, *Moré*) preserved the bones of the dead in their huts suggests a cult of the dead, but we lack confirming evidence. The *Island Carib* and the ancient *Guaraní*, however, believed that the souls could return to the bones and advise their living relatives.

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[1] Davila (1942, p. 409) attributes to the Coastal Indians the following reasoning: "Los Europeos, el día de Todos los Santos dan de comer, como nosotros, y de beber a sus muertos. Vayamos, pues, nosotros tambien a la iglesia y llevemos de comer a nuestros muertos."

*Cubeo* religion to a large extent was based on a cult of the Ancestors, who were invoked during tribal meetings, when they were represented by gigantic trumpets. The *Bororo* also believed that the ancestral souls continued to maintain a close relationship with the living and often came to their villages to eat, drink, and dance. The link between the dead and their living relatives was provided for by a special category of shamans, the aroettaware, who served as mediums for the souls of the dead. The great feasts celebrated by the *Guaicurú* in their cemeteries probably were the expression of a cult of the dead.

The *Cágaba* regarded the Ancestors, whom they called aluna (souls), as superior to demons. They attributed the origin of all human institutions to the Ancestors, whose actions were always beneficial to mankind; demons, on the contrary, were harmful unless they were controlled by the Ancestors. The aluna long ago ceased to take any interest in human affairs, but men continued to exist, thanks to their teaching and to the celebration of ceremonies introduced by them.

Likewise, ancestor worship was a salient feature of the religion of the ancient *Taino*, for the great Zemi of the caciques were believed to contain the souls of the chiefs' ancestors, and certain cotton and wooden zemis contained the skulls and bones of deceased relatives.

The most important religious celebration of the *Shipaya* was the dance of the ghosts, which took place at the special request of the headman of the dead. In order to dance and drink, the ghosts had to borrow the body of a shaman whose soul supposedly remained idle in a hut while his body, covered by a long cape, danced on the plaza. The feast continued for several nights until each ghost and some animal spirits had in turn executed a dance and sung a song.

There is no trace of a cult of the dead among the Indians of Tierra del Fuego.

## THE CONCEPT OF SOUL

In a considerable number of South American Indian tongues the words for soul, shadow, and image are synonymous (*Bacaïri*, *Taulipáng*, *Cubeo*, *Arawak*, *Apinayé*, *Abipón*). The *Carib* make no distinction between soul and heart. In *Tucano* there is but one word for soul, heart, and pulsation. In *Witoto* the word komeke has the meaning of heart, chest, memory, and thought.

The *Island Carib* believed in the plurality of souls which resided in the heart, in the head, and in the articulations of the body where pulsation was felt. Only the first soul went to the sky; the others, which remained on earth, changed to beasts or spirits.

Very similar conceptions were held by the *Taulipáng*. These *Carib* believed that man had five souls, "like men but uncorporeal, the same fested in the widespread belief that soul loss caused disease and death another lighter and a third even lighter, the fourth very light, but still a shadow. The fifth soul is the one that talks. It is the soul that manifests itself by yawning and sneezing and deserts the body during sleep." Only the "speaking soul" went to the other world after death; another remained with the corpse and a third turned into a bird of prey (Koch-Grünberg, 1923 a, 3:170–172).

The *Shipaya* believed that the soul had two parts; one,called awa, was the envelope of the other and the equivalent of the ghost. Shamans translated the name of the other part as language, heart of a person (Nimuendajú, 1921–22, 16–17:367).

According to the *Apapocuva-Guaraní*, two souls coexisted in every man. One, called ayvucue, which came from the mansion of some deity in the west, zenith, or east, entered the body at birth and was identified with a peaceful disposition, gentleness, and a craving for vegetables. The other was an animal soul (acyigua), which harbored in a person's neck; it was this one that actually conditioned an individual's temperament. A patient, friendly person might have a butterfly soul; a jaguar soul made a man cruel and brutal. In general, unrest, violence, malice, and a lust for meat were attributed to the acyigua. After death, the two souls separated; the ayvucue, though it usually tried to reach the Land-Without-Evil, sometimes lingered dangerously near its former home; the animal soul, too, was likely to turn into a fearful ghost (Nimuendajú, 1914, pp. 304–306).

Every adult *Botocudo* is said to have as many as five or six souls, but only one of them resides in the body, the rest remaining nearby.

The *Chocó* also believed that man had two souls: a short one for the body as a whole and a long one for the bones (Wassén, 1935, p. 118).

Throughout South America the belief prevailed that sleep, catelepsy, and trance were the result of a temporary absence of the soul, which abandoned the body to wander far away, often to the land of the dead. Shamans enjoyed the power of sending their soul on missions to observe events taking place in distant regions. The adventures of the soul during these journeys were pictured in dreams and visions. It was often deemed dangerous to wake a person suddenly, for then his soul might not have time to reenter the body (*Bacaïri*, *Paressi*, *Taulipáng*). Many Indians (e. g., the *Lengua* and *Pilagá*) were inclined to attach greater importance to events experienced in dreams than to those encountered in their waking hours. At one time in recent years the *Pilagá* were on the verge of war because an Indian had dreamed that some members of their tribe had been killed by soldiers. *Bororo* women sent their souls after a hunting party to find out where the men were and what they were doing.

The fragility of the bond between soul and body was also manifested in the widespread belief that soul loss caused disease and death.

The *Aymara* diagnosed many diseases as the consequence of the sudden departure of the frightened soul. It was also believed that the soul could be kidnapped by a sorcerer or even more often by a ghost or spirit.

Souls were far from being immortal. They might be destroyed during the journey to the other world; even after they reached safety, there they might undergo several metamorphoses and finally disappear (*Apinayé*, *Mataco*). The *Apinayé* were persuaded that souls died of a pain on the left side and were transformed into animals, tree stumps, and termite hills (Nimuendajú, 1939, p. 141).

### MATERIAL REPRESENTATIONS OF SUPERNATURAL BEINGS

**Images and idols.**—The Peruvian deities were represented by idols placed in the shrines. Viracocha often was represented by anthropomorphic images, but in the great temple he was symbolized by an oval golden plate. The images of the Sun combined solar and anthropomorphic features. Many idols destroyed by the Spanish inquisitors were, however, rudely carved or had no particular form. The famous idol of Pachacamac was a roughly sculptured post. In modern times, the *Aymara* and *Chipaya* of Carangas represented the mallcu or guardian spirits of the ayllu by whitewashed earthen cones.

In contrast to the tropical tribes of the South American mainland among whom material representations of deities or spirits were infrequent, the *Taino* of the West Indies centered their religion around the cult of countless images and sacred objects collectively called zemis—stone or wooden images, images of cotton and other fabrics enclosing bones, prepared skulls, masks and frontal amulets, pictures and body decorations (Joyce, 1916, p. 182). Some of the large zemis, such as the two sweating images in the cave of Giovavava, were those of nature deities; others were the receptacles of ancestral souls. Although some figures were carved in the shape of animals or birds, the majority were anthropomorphic. Wonders were related about certain famous images that could walk, talk, and grow mutilated parts. Zemis were carved as a result of supernatural warnings; the tree itself directed the work of the artisan. Certain zemis belonging to the cacique were worshiped by the whole tribe, but each man is said to have had his personal one. The stress put by the Spaniards on the zemi cult and the vast number of these images found in caves and excavations confirm the rich development of fetishism in *Taino* culture.

Although on the whole sacred images are rare among tropical Indians, they have been mentioned in several tribes. Stone statues have been reported anciently in the Guianas; one of them which came from the Uaupés is now in the Musée de l'homme in Paris. Nevertheless, their occurrence must have been most unusual. In recent times, shamans occasionally used clay or wooden dolls; their exact function is not known, but they cannot be regarded as idols. Cardim states that the ancient *Tupinamba* deposited offerings at the base of posts planted at places haunted by spirits. The *Tupinamba* of the region of Maranhão kept small wax images in cabins built in the bush where the shamans went to burn sweet-smelling resins and to make offerings to the spirits.

The feathers which the *Palicur* stuck to the end of the painted sticks on the dancing ground sheltered spirits. Among the *Shipaya*, *Curuaya*, and *Juruna* of the lower Xingú, the god Kumaphari was represented by a crudely carved image. According to Roquette-Pinto (1938), an unshaped piece of wood was one of the most sacred objects of the *Paressí.*

The deities of the *Tacanan* tribes of the basin of the Madre de Dios were represented by pieces of wood covered with feather mosaics, by pebbles, and by manufactured objects, such as spears, arrows, axes, and pots. The carved wooden pieces were images of the Wind, Sun, and Moon gods; the pebbles were the deities of maize, yuca, and bananas. The image of the god Epymará was an elliptical piece of wood.

Rivero (1883, pp. 277–278) mentions some petroglyphs in the *Achagua* county that played a part in religious ceremonies. Formerly, wooden images seem to have been regarded by the *Mbayá* as religious objects; in more recent times they have sunk to the level of simple children's toys.

The most sacred object in a considerable number of tropical tribes was the gourd rattle or maraca. The grains inside were manifestations of spirits and the tinkling noise, the spirits' voices. The *Tupinamba* made food offerings to the maraca and consulted them to learn the spirits' intentions. Rattles were the instrument par excellence of the shaman and are discussed in connection with shamanism.

In several *Arawakan* tribes (*Ipurina*, *Paressí*, *Mojo*), and in some others influenced by them (*Tucano*, *Witoto*, *Yurimagua*, *Tucuna*) large bark trumpets and flutes represented either vegetation demons or ancestors (*Tucano*). Among the *Paressí*, there were the images of the serpent demons, Nukaima and his wife. Sacred trumpets and various other instruments played a prominent part in the alligator dance of the *Mojo*. In all these tribes the sacred musical instruments were taboo to the women and were kept in the men's house (*Paressí-Cabishí*) or were hidden in some sacred spot.

**Masks.**—Masked characters appear in the religious ceremonies of many South American tribes but only in a few cases do we have sufficient information to understand the significance of the performances (Krause, 1911, pp. 97–122). Among the *Ona* and *Yahgan* the masked men who stood in front of the kina hut impersonated demons and spirits; the purpose of their appearance was to frighten the women. This was also the intention of the *Chamacoco* mummers.

Dances by masked men have been described among the *Carajá* and the *Shavajé*, but their significance is obscure. The masks were kept in a special house taboo to women. *Carajá* masks represented animals and were worn both at feasts that coincided with the ripening of various fruits and at celebrations following successful hunting or fishing expeditions. Some were worn by men who went around the village begging for food. Others were associated with the cult of the dead.

South of the Amazon, the most remarkable masks are those that were formerly worn at dances by the tribes of the upper Xingú. Essentially anthropomorphic, these masks were considered to be representations of animals, each of which could be identified by a distinctive feature or by a symbolic painted motif. The masks were of several types. Some consisted of an oval frame covered with a coarse cotton textile, which might be unadorned or have attached to it stylized eyes and nose modeled in wax. The most common were rectangular pieces of wood, often with only the forehead and nose carved and the symbol of some animal painted as an ornament. Especially spectacular was the wooden mask with the bell-shaped skirt fully 30 feet (10 m.) in circumference, which gave the dancer the appearance of a gigantic mushroom. Unfortunately, Von den Steinen, who has described the masks of the Xingú tribes in great detail, gives little information about the religious or magic significance of their use. He states that masks were worn in a dance representing a fishing party or other activities, but does not say whether the performance was given to help fisherman or for some other purpose.

Most remarkable masked dances were performed by the tribes of the Caiarí-Uaupés soon after a death had taken place in a village. While the widow and mother of the dead man wailed, masked dancers impersonating animals and demons simulated an attack upon the communal house. When the attacking party finally forced an entrance they sang ritual songs and performed dances which culminated in a phallic pantomime. The whole ceremony has been interpreted by Koch-Grünberg (1923 b, p. 248), who saw it, as a ritual propitiation of the ghosts and demons who might have caused the death.

Dancers wearing masks sometimes appeared in connection with puberty feasts. The *Lengua* of the Gran Chaco represented in a dance the supernatural dangers that threatened the menstruating girl. In the course of the performance there appeared lines of boys dressed in nandu (rhea) plumes and wearing masks representing evil spirits. They passed among the crowd jingling bunches of deer hoofs and from time to time uttered shrill cries. Whenever they approached the girl, the women drove them off. Among the *Tucuna* Indians of the Upper Amazon, the most colorful episode of the elaborate girls' puberty feast was the appearance of the guests wearing huge masks that represented demons and animals. They came in small groups, asked for drinks, and then vanished into the forest.

In ancient Perú, masks were worn during religious festivals. Judging from paintings on Chimu pottery, the masks represented animal deities. Masked dancers still perform religious dances in modern Perú and Bolivia, but as yet no study has been made of their symbolism.

## CEREMONIALISM

Even though the elaborate and spectacular rites of the *Inca* and *Chibcha* religions seem far apart from the simple practices of the forest Indians, there are nonetheless many common elements. The differences consist mainly in the infinitely greater complexity of *Inca* ceremonies, in the importance given to practices which elsewhere occurred only in embryonic form, and in the existence of a class of specialists who carried out the cult activities. Sacrifice, prayer, and religious songs occurred also among tribes whose approach to the supernatural was characterized by magical rather than by religious attitudes.

In the Andean area, with the possible exception of Chile, the service of the gods acquired a stable and complex structure requiring so precise a knowledge of detail that only specially trained priests could lead religious ceremonies. In tropical South America and on the southern plains the simpler rituals were familiar to most if not all the members of the community. The religious life and ceremonialism of some tribes of eastern Bolivia (*Mojo*, *Manasí*, *Araona*) were markedly influenced by Perú. Among these tribes the shamans were tending to become priests who represented the community before the deities.

In most tropical tribes of South America, religious ceremonies lack complex and meticulous ritualism. Symbolic elements are, as a rule, very elementary. In this respect, the magico-religious festivals of the *Arawakan*, *Panoan*, *Carib*, and *Tupí-Guaranian* tribes cannot be compared to the elaborate initiation rites of the *Ge* tribes or even to the *Tucuna* puberty feasts. Yet it must always be borne in mind that apparent simplicity may be due largely to lack of documentation.

The early chroniclers described at some length many of the feasts that marked almost every month of the *Inca* calendar. The Emperor and his families as well as the provincial chiefs took part in some of the festivals. The most solemn of all was the Intip raimi, in which the splendor of the costumes and the lavishness of the gold and silver paraphernalia were most impressive. This ceremony opened with an homage to the Sun rendered by the *Inca* Emperor, his families, and the curaca. After this the Emperor made a libation to the Sun and drank chicha with his families. Then, with the Emperor leading the procession, everyone went to the Sun Temple. Only the imperial family was admitted to make offerings of precious vessels or images to the god. Omens were read in the entrails of a black llama which was sacrificed to the Sun. Later many llamas were slaughtered and burned in a holocaust lighted by means of a concave mirror. The ceremony ended with banquets and drinking bouts. Throughout the feast, the hierarchy of the rulers and functionaries of the Empire was strictly observed.

The situa feast was a magico-religious ceremony for the expulsion of diseases and calamities that also honored all the minor idols and mummies of the dead, which were carried in procession and offered libations. Blood puddings or bread prepared with the blood of llamas were eaten by all the participants and were sent to the shrines of the Empire.

Other Peruvian feasts that coincided with the beginning of the sowing season, the harvest, and the onset of the rainy season combined propitiatory and magic rites to ensure an abundant supply of food.

There is less information about *Chibcha* festivals. These were attended by the Zipa who was preceded by processions of men covered with luxurious ornaments of feathers and gold or wearing gold masks; many were disguised as animals. Perhaps the parade was symbolic, for it is said that those who carried masks with tears were beseeching the aid of the gods while those who danced and jumped were celebrating the success of their prayers. Offerings of gold to the snake god of Lake Guatabita were made by the chief, who was gilded with gold dust, and his noblemen, who went on a raft to the middle of the lake for this purpose. Processions were made to other lakes as well that were the abodes of snake gods.

The most spectacular festivals of the Amazonian tribes were those held for the vegetation demons, usually called Yurupari feasts (Northwest of Brazil, *Puinake*, *Yurimagua*, *Tucuna*). Among the *Tucanoan* and *Arawakan* tribes of the upper Rio Negro and the basin of the Cairí-Uaupés, they were celebrated when certain palm fruits relished by the Indians (e. g., miritî and yapura) were ripe. When the feast opened baskets of the fruit were ceremonially carried to the village preceded by men who blew huge trumpets. These instruments, which represented the vegetation demons, were sacred and, under penalty of death, were kept hidden from the women and children at some distance from the village. During the first part of the ceremony, the women remained closed in a hut, but after the performance of ritual dances in which the men whipped each other with long lashes, the secret rites ended and the women joined the men to dance and make merry for several days.

The *Arawakan* tribes who migrated south of the Amazon faithfully preserved the cult of the sacred trumpets. The *Ipurina*, *Mojo*, and *Paressí* also celebrated this festival, and the terrorized women were made to believe that they would be punished by the demons if they did not supply the men abundantly with beer and food.

The Yuruparí ceremonies, so characteristic of the religion of the Rio Negro and Orinoco tribes, fulfilled several functions; by their means the men favorably influenced the fertility spirits, brought about cures, and enhanced their prestige and their power over the women.

**Human sacrifices.**—Human sacrifices were entirely limited to the Andean region, unless we regard the cannibalistic meals of the *Shipaya* as a form of human sacrifice. Although in Perú they never reached the monstrous proportions characteristic of México, it is known that at the enthronement of an *Inca* as many as 200 children were put to death by strangulation or extraction of the heart. The *Chibcha* also practiced human sacrifice on a large scale. Children bought from ambulant merchants were kept in temples, and were killed when they reached puberty. So sacred were these prospective victims that they could not touch the ground. In a peculiar ceremony, the purpose of which is unknown, the *Chibcha* sacrificed a slave by tying him in a sort of crows' nest on a pole and shooting him with darts. Priests standing under the pole collected the dripping blood. When a chief built a new palace he had small girls, said to have been given by noble families, crushed beneath the main posts to ensure the good fortune of the building.

The Indians of Urabá strangled and burned slaves before the idol of the Dabaina goddess. Sacrifices of war prisoners by ablation of the heart were a feature of the religion of the Indians of the Cauca Valley.

**Sacrifices of goods and animals.**—Sacrifices of goods and animals were an essential cult feature only in the area of the high civilizations of the Andes. Almost all public and private religious ceremonies required offerings or blood sacrifices. Immense treasures in the form of gold figures and precious stones were buried or were thrown into lakes by the *Chibcha* to propitiate their gods. *Inca* offerings included a wide variety of foods, magic substances, clothes, and jewels. In modern times the same variety, though not, of course, the same value, characterized the sacrifices made by the impoverished *Aymara;* the care with which the priest combined and placed the substances gives us an inkling of the complexity of the sacrificial ritual in the great temples of the vanished Empire.

The same rigid ritualism regulated the sacrifice of animals in the

Andean area. The victims were selected in accordance with mystical associations and rules determined their acceptability to the deity. The sacrifice also was a divinatory rite, for omens were read in the entrails of the victims. The walls of the buildings and the faces of the idols were smeared with blood.

Bloody sacrifices also existed among the *Araucanians*, who introduced them into the Pampas. The *Tehuelche* strangled mares at funerals to appease the ghosts and when danger was lurking to placate the spirits.

Sacrifices of food, drink, and goods in honor of spirits or demons were practiced by many *Tupí-Guaraní*, *Arawakan*, and *Carib* tribes. Sometimes a whole community, sometimes an individual who wished to placate a spirit or gain its favor, made a sacrifice. The *Palicur* expressed their gratitude by inviting spirits to drinking bouts. The supernatural guests entered benches carved in animal shapes and, as soon as their presence had been announced, were given gourds of cashiri. The *Carib* feasts described by Rochefort (1658, p. 417), which were celebrated after the cure of a sick person, probably were identical to those of the *Palicur*, for they offered the spirits cassava and manioc beer on small tables. The offerings were not accompanied by "any adoration nor prayer, and consisted only in the presentation of these gifts." The *Taino* offered cassava cakes to the zemi. The piai received the cakes, blessed them, and divided them into small pieces, which he distributed to his assistants. The fragments were sacred talismans to be preserved for an entire year.

The *Mundurucú* offered food and alcoholic drinks to the Mothers of Game, Fish, and Plants, whom the shamans summoned during feasts dedicated to these supernatural beings. Even in recent times no *Carib* would cut a tree for a canoe or a bow without first making an offering to the spirit inside; when he opened a clearing in the forest, he poured some chicha on the stumps of the felled trees. Before eating fish and game, the *Bororo* reserved a few morsels which were given to the spirits through the shamans. The *Ona* practiced an incipient form of sacrifice, for whoever partook of a late meal would throw away a small piece of meat for the High God. During cold weather or a heavy snowfall they also would cast out a firebrand for the Supreme Being. These offerings were not regarded as gifts for the High God, but as symbols of gratitude. The sacrifice of a firebrand, however, has all the earmarks of a magic rite.

**Prayer.**—Prayer constituted an important part of *Inca* liturgy. During the ceremonies, the priests recited prayers which were repeated by the assembly. We have a few examples of prayers or hymns addressed to the Supreme Being glorifying him and expressing a longing to get a better understanding of his being. If the translations are accurate, they equal some of our best psalms in style and in the nature of the thoughts expressed. Simple prayers made by individuals to obtain some favor from a god were not based on stereotype formulae, but were improvised in the spirit of the moment and often were addressed silently.

Prayer was the only external form of worship of the Supreme Being by the *Yahgan.* The 60 prayers collected among these Indians fall into the following categories: (1) Complaints about the death of a relative; (2) requests for a favor; (3) prayers of thanksgiving; and (4) prayers expressing the greatness of the Supreme Being and corresponding to our "If the good God wills it." Although these particular prayers were couched in a somewhat patternized, archaic language, anyone could address the Supreme Being in his own words.

An *Apinayé* who wished to make a request of the Sun isolated himself and without any preamble asked, "Father, give me this or that." The *Mundurucú* prayed the Mother of the Manioc in these terms, "O Mother of Manioc, favor us with the fruits of your sons. Don't let us suffer privations. Every year we pray to you and do not forget you."

**Fasting and purification.**—Participation in religious ceremonies often required periods of fasting and various kinds of purification. Before the *Taino* could take caoba to have visions or could consult a shaman, they had to fast and drink the juice of a certain herb. As a preamble to a feast, members of the whole community made themselves vomit by tickling their throat with a small stick.

**Confessions of sins.**—Confession has a very limited distribution in South America. It has been reported only for the *Inca* of Perú, the *Ica* and *Cágaba* of Colombia, and the *Tupinamba* of the Brazilian coast. As a rule, confession to a priest or shaman served as a means of preventing or allaying private and public disasters which were the consequences of the violation of taboos; sometimes it served as a purificatory rite before the celebration of a feast.

In Perú confession was obligatory in times of illness and also in anticipation of certain feasts (e. g., the oncoy mitta, which was celebrated in June in honor of the Pleiades). When excessive frost endangered the plantations, twins and all others who had had an abnormal birth (e. g., those born feet first, with a harelip, etc.) were subjected to special treatment and had to confess their sins.

The confessors, who were recruited from among the diviners (huacuc) and who were called ichuri or aucachic (Cajatambo and Huaylas), heard all the members of their own ayllu including their wives and children. At one time confession seems not to have been secret, but it became so later; certain hideous crimes were reported to the supreme priest (huillac umac) or his assistant (hatun huillac).

The confession took place near a stream. After the person had enumerated his faults, the confessor gave him maize and shell powders to blow away, struck his head with a small stone, and ordered him to wash in water mixed with maize. Sometimes the penitent bathed in the stream. The confessor consulted auguries to discover whether the sinner had lied or withheld a fault. He also meted out penances which took the form of temporary observance of chastity, fasting, or abstaining from certain foods (e. g., salt and pepper), or a period of isolation on a mountain top. Wealthy persons made offerings to the gods.

In very exceptional circumstances, the *Inca* Emperor confessed to the Sun and the Great Priest to Viracocha; neither one confessed to a person on any occasion. When they performed the rite they held in one hand a bunch of straw or grass on which they spat before throwing it into a stream or fire.

One of the most important functions of the *Cágaba* and *Ica* mamas (priest-shamans) was to hear confessions. A man would confide his "sins" to a priest under the following circumstances: When he was ill, before starting the treatment; when he feared he might become ill; before a feast in which prophylactic rites were celebrated; and after an eclipse or an earthquake. Most so-called sins were sexual (e. g., intercourse with a relative of forbidden degree or with the servant of a mama, adultery with an unpurified widow, etc.). Planting coca without the priest's permission and stealing (*Cágaba*) also were considered offenses against the gods. The mama imposed a penance, but its form is not specified (Preuss, 1919–20, pp. 95–96; Bolinder, 1925).

The *Tupinamba* attached great importance to confession. Yves d'Evreux (1864, p. 309) states that when a great shaman (pagi) visited the villages he ordered everyone, but especially women and young girls, to confess to him. If they refused to comply, he threatened them, saying that his spirits would punish them for not declaring their offenses. Afterward he gave them absolution. Nobrega (1844, p. 92) confirms this statement, and adds that before the coming of an important shaman women went in pairs into every hut, where they mutually confessed offenses against their husbands and asked for forgiveness.

## MAGICAL PRACTICES

Magical practices to insure good luck, avert danger, cure or inflict disease, and in general to help people perform acts the outcome of which is not under their rational control, are extremely numerous and often have been recorded while the more significant religious or social phenomena have passed unobserved. The magic rites that accompany life crises and economic pursuits are more conveniently described in connection with the circumstances that provoke them. In this section we will examine only a few magic rites with special significance in specific areas.

**Ordeals.**—Whipping is one of the most conspicuous ritual acts in the magico-religious ceremonies of most Guiana tribes as well as among several Amazonian groups. This ordeal made the victim strong, courageous and diligent, and conferred upon him other virtues; for this reason it was associated with puberty rites, and with preparations for war expeditions, etc. Apparently, it also had purificatory properties, for both new householders and mourners who were celebrating a funeral feast were whipped. The relationship between flagellation and the fertility of fields is less clear, but on the Orinoco and the Rio Negro and among the *Mura*, whipping was an important element in agrarian festivals.

Exposure to ant or wasp bites seems to have had a similar effect. Guiana Indians claimed that the insect ordeal developed proficiency in hunting and fishing, refreshed the body, gave one vigor, and made one gay and lusty. They also believed it to be an excellent prophylactic against disease. The ordeal was a particularly appropriate treatment for boys and girls who had reached puberty and were about to become full-fledged, useful members of the community, but not because it was a test of courage, as has often been said. The ant ordeal was administered for the first time at puberty or during initiation rites, but most people voluntarily exposed themselves to it whenever they desired to fortify themselves to increase their vitality and ability.

**Scarification.**—From the Guianas to the Chaco, Indians ascribe great virtue to scarification, for by this means they believe they can dispel fatigue and impart strength to their body. The material out of which the scarification awls are made determines the effect. *Betoya* fishermen, for instance, punctured their skin with a sting ray tail, hunters with pecari or bird bones (Rivero, 1883, p. 348).

In most Chaco tribes, when a man engaged in heavy work felt tired, he drew blood from his limbs by pricking the skin with a rhea or jaguar bone awl. The *Guaicuruan*-speaking Indians gave much importance to this treatment and encouraged even small children to jab themselves.

**Tattooing and painting.**—Although it would be a gross exaggeration to stress, as Karsten (1926) does, the exclusively magical value of tattooing, there can be little doubt but that tattoo marks are frequently acquired in connection with life crises or that they have a prophylactic power. The *Toba* specifically explained to me that the tattooed motifs on their limbs were talismans against disease. The ancient *Betoya* painted serpents on their legs so that the "venom of the painted reptiles would set in flight the real snakes" (Rivero, 1883, p. 348).

When a *Tupinamba* girl had her first menses, geometric designs were cut on her back with a sharp rodent tooth; ashes rubbed into the wounds left indelible tattoo marks. Before returning to everyday life, a *Tupinamba* who had ceremonially killed a prisoner slashed various patterns on himself with an agouti tooth; the more such tattoo marks a man could exhibit, the higher was his prestige.

Incision tattooing of the girls was still practiced by the *Guarayú* in the last century.

While we seldom learn the reasons why Indians use body painting, we may surmise that they do attach magical or other values to the practice, from the circumstances under which they paint themselves or their relatives. Infants very often are smeared with urucú soon after birth. Menstruating girls usually are profusely painted. Warriors commonly go to battle wearing elaborate designs on their person. Mourners frequently paint their face or their body black with charcoal (*Yahgan*, *Ona*, *Tehuelche*, *Araucanian*) or with genipa (*Tupinamba*, *Macushí*, *Mundurucú*, *Sipibo*). *Cashinawa* male mourners smeared their entire body with genipa, women only parts of it, lest they be killed by the ghost of the deceased (Abreu, 1914, pp. 145–149). Red was the mourning color of the ancient *Chibcha*, who smeared their body with urucú and wore red capes. Among the *Macushí* also, the closest relatives of a dead person painted themselves with urucú; more distant relatives stained only their feet and hands. The same distinction between close and distant kin was made by the *Jirara* and *Ayrica* who, however, used genipa as a sign of mourning.

**Talismans.**—Countless talismans and amulets are found in South America. Only a few examples are listed here. Among the most famous are the bina of the Guiana Indians. These were leaves or tubers which bore some superficial resemblance to the animals upon which they were supposed to have influence. For instance, the talisman used to catch aymara fish (*Hoplias macrophtalmus*), which have a spotted skin, was a leaf with black and white spots. Another, considered to be a good talisman to charm birds, was a small tuber shaped like a beak (Ahlbrinck, 1924, p. 224).

The *Jívaro* traced designs on their skin before going on hunting parties with the stones found in the crop of birds. Such stones were carefully preserved.

The Highland Indians of Perú carry on their persons and keep in their houses a very considerable number of amulets. The shape of something which is desired may be carved in soft stone and used as an amulet: a hand with money brings good fortune, a simple hand removes fatigue and also endows a weaver with skill. Many amulets are simply stones which seem to resemble an animal or an object.

The *Toba* try to insure their hunting luck by wearing belts containing fragments of the skin of game animals and various herbs. Small children wear around their neck a small leather packet containing magic herbs.

**Chants and charms.**—Chanting is, of course, closely linked to and accompanies all religious ceremonies throughout South America. Its importance as a means of averting impending dangers is well illustrated by the behavior of the *Apapocuva-Guaraní*, who, at the slightest difficulty or even because they felt depressed, resorted to chanting. Hardly a night passed when no one chanted a magic song. When the matter was of some importance, maracas or stamping tubes also were used.

The compulsive power of chanted charms is exemplified in the *Ona* myth about the origin of chanting, in which the first ancestor, who invented chanting, was able to kill a whale and bring it to shore singlehanded by this means (Gusinde, 1931, p. 635).

The power of charms and magic chants is forcefully expressed in the mythology of the *Witoto*, who seem to have believed that chants preceded the Supreme God. Words, that is to say, chants, were said to be more important than the gods, for without the rites and feasts in which they were sung, the gods could achieve nothing.

Shamans use charms and incantations as a prophylaxis against the impure influences that may affect people and objects, and also to expel diseases and destroy enemies, to summon spirits, and to endow objects with supernatural power. A great many charms are known to ordinary people, who recite them to protect themselves against danger, to rid themselves of pain, or to ensure the success of an enterprise. Unfortunately, few charms have been recorded except for a large collection obtained by Koch-Grünberg among the *Taulipáng* (1923 a, 3: 219–222). The *Taulipáng* charms fall into two categories: (1) those intended to cause damage; (2) those that ensured the success of a cure or an enterprise. They were recited to heal wounds, snake and sting ray bites, throat inflammations, pustulent eruptions, stomach worms, dysentery, and also to facilitate childbirth or, on the contrary, to make it difficult. Some charms could turn an enemy into a friend. The efficacy of each one is guaranteed by a short myth in which animals, plants, and personified elements play a large part. Animals that figure in the charms have some relationship to the desired result. For instance, a person who suffered from a swelling caused by deer flesh would invoke a jaguar, since it feeds on deer. After childbirth, before eating fish, one had to call the otters because they eat fish. In a charm to relieve sore throat, the howling monkey had to be mentioned.

There is also a charm to disarm an enemy by making him laugh; this one alludes to armadillos because, as a *Taulipáng* myth explains, lightnings were once about to kill the armadillos when the animals made them laugh, so that instead of destroying them, lightnings gave them worms.

Sometimes the pronouncement of a charm gives an object magic virtue. The *Aparaí* recited a charm on water given as a remedy to a sick person in order to force helpful spirits into the liquid (Speiser, 1926, pp. 187–188).

The *Shipaya* believed that a charm could assume a human form to accomplish the wish that had caused its expression. A wiru charm, for instance, went in the guise of a man to an enemy village and killed everyone he met (Nimuendajú, 1919–20, p. 1007).

**Dances.**—Feasts and ceremonies are almost always occasions for dancing. Dances may be of a profane character and may be performed only for amusement, but, like chants, they very frequently have a magico-religious efficacy and are executed to influence supernatural beings or to coerce nature.

When danger threatened the *Apapocuva-Guaraní* community, even if it was only the phantasy of a shaman, a dance often was organized to combat it. A common worry, an epidemic, some unreasoned fear, a collective enterprise in the making, or sometimes the mere pleasure of an event could be the occasion for the celebration of a ritual dance. The *Kamarakoto* Indians organized the Great Serpent dance to cure snake bites and ulcers. Certain dances of the *Aparaí* had an immediate effect on game animals and fish. The *Cágaba* explained the magic virtue of the dances they performed by saying that they had been revealed by the very spirits who caused illness and other troubles but that these were forced to abandon their evil intentions when the dances were executed. Many Chaco dances had a definite ceremonial value. (See Handbook, vol. 1, pp. 353–354.)

Dances were organized in connection with most of the important occasions of a person's life and of the yearly round of a tribe. These are best described, however, in connection with the events themselves.

The mystical value of dancing is illustrated by the almost morbid importance it assumed in South American Indian revivalistic movements. In the 16th century, as well as in very recent years, the *Guaraní* resorted to frenetic dancing in order to reach the Land-Without-Evil. So great was the power they attributed to dancing that they were convinced that if only they could keep going long enough both they and their ceremonial house would fly to the sky. They often attributed their failure to achieve their aim to the weakness of their bodies.

**Divination.**—In South America the most common form of divination was consultation of the spirits or gods through the mediation of shamans or priests. Stupefaction by same narcotic was the means of contact with the supernatural taken by the shamans in most primitive tribes and by certain categories of priests in Perú and Colombia.

The *Inca* had other forms of divination which they used on solemn occasions. Expert diviners summoned spirits to braziers which threw flames in confirmation of the spirit statements. On other occasions, diviners examined the markings on the entrails of sacrificed animals.

In Perú prognostications about the future were made by observing the movements of animals or insects, especially spiders, or the positions of coca leaves, by counting pebbles, and by examining saliva which had been mixed with coca juice and spat on the hand.

*Chibcha* wizards watched the twitching of fingers and the movements of joints.

The *Araucanians* divined with chicha and with water dropped on a stone ax. The *Caingang* attached oracular significance to the belches of a person who had drunk maté.

However, dreams were the most important as they were the most universally accepted source of omens. Shamans often were asked to interpret them, and the portents of the dream of a single man could determine the course of an undertaking involving the whole group.

The Indians also regarded as an infallible sign of impending fate a considerable number of small occurrences like the cries of birds, the cracking of trees, the appearance of meteors, and other natural phenomena. Omens exercised such an influence on most Indians that they never hesitated to interrupt an enterprise as soon as an omen foreboded a bad outcome.

Modern *Aymara* have specialists who practice divination by reading coca leaves, observing the flight of birds, the direction of smoke, the movement of flame, the position of the stars, the viscera of animals, the interpretation of dreams, and the movement of objects floating in water (Tschopik, Handbook, vol. 2, p. 563).

**Defenses against evil:** [2]

*Defense against evil spirits.*—The forest Indians devised many means to keep at bay or escape from threatening spirits. *Carib* Indians dropped string puzzles designed to catch the attention of the bush spirits, who became so engrossed in solving the problem that they forgot to pursue their victims. The Pomeroon *Carib* planted a certain species of caladium near their huts to warn them when a spirit was in the vicinity. Another method of chasing a spirit was to shout, "Show who you are or else bring something to eat!" Playing flutes and dancing also dispersed evil spirits.

All Indians avoided walking in the bush at night; when they had to expose themselves to this danger, they generally carried a firebrand.

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[2] See also Sorcerers under Shamanism.

They avoided going alone through regions haunted by spirits, for spirits never attacked groups of people, but only solitary wanderers.

*The expulsion of disease.*—When the *Pampas* Indians and the *Tehuelche* were beset by ailments and misfortunes, they organized a ceremony that was actually a mock battle against the walichu, or personified calamities. In modern times in similar magic rites performed in the Chaco for the same reasons, men and women wearing sacred paraphernalia and brandishing calabashes threatened their invisible enemies.

During the situa feast of the *Inca*, a general expulsion of disasters, misfortunes, and illnesses was effected by means of armed force. Soldiers massed on the Cuzo plaza charged toward each of the four points of the horizon shouting, "Go forth all evils, go forth all evils!" Their clamor was echoed by the crowds.

## PRIESTHOOD

East of the Andes, where the cult of the gods and spirits still was somewhat amorphous, the shaman acted as the principal intermediary between the human and the supernatural world. The shaman's functions, which were essentially prophylactic or remedial and were performed primarily in behalf of the individual, seldom were those customarily associated with the concept of priesthood. Nevertheless, no clear cut distinction can be made between the two kinds of agents of the supernatural, for in many cases the shaman, like the priest, acted in behalf of the community, organized and led group ceremonies, and made sacrifices to the gods, spirits, or demons.

In two regions of tropical South America, the shaman seemed to be developing into a priest in the strict sense of the word. The *Taino* piai, like his colleagues on the mainland, healed the sick, but he also officiated at the Zemi ceremonies for the whole community.

There was a similar situation among the *Arawakan Mojo* and their *Chiquitoan* neighbors, the *Manasí*. Our early sources draw a distinction between the priests and the medicine men, but the difference seems to have been based on the specialized activities of certain shamans rather than on their functions. Priests and shamans underwent the same training and observed the same taboos. In the case of the *Manasí*, it is even specifically stated that priests attended the sick. Moreover, the *Manasí* priest's approach to the gods still followed the shamanistic pattern; the god descended into the tabernacle in the same way that the spirit entered the shaman's hut. Indeed, the rite was essentially a direct and personal interview between the mapono and the gods rather than prayer and sacrifice to an unseen deity. The final ascent of the priest also was an old shamanistic trick.

A real priesthood characterized the religions of the *Inca* and *Chib-*

*chan* peoples. In ancient Perú priests tended the shrines, made sacrifices, and prayed to the gods in behalf of the faithful. In addition they were diviners, interpreters of oracles, and confessors. The clergy was organized into a hierarchy at the head of which was the huillac umac. Priests were appointed by the Emperor or inherited their profession; traditionally, the high priest was a close relative of the Emperor or, according to Cobo (1890–93), a member of the Tarpuntay ayllu. The Sun priests in the provinces belonged to ruling families. A large number of priests who performed specialized functions were attached to the most famous sanctuaries such as the Coricancha; smaller shrines had only one priest or were attended by an old man without specific priestly training.

The gods also were attended by the mamacona, Chosen Women, who were lodged in conventual buildings. They wove the textiles used in the cults and prepared chicha for festivals. Those who were not selected as wives or concubines by the *Inca* Emperor and nobles preserved their virginity.

Among the *Chibcha*, priests enjoyed a very high prestige and authority. They seem to have been recruited among the nobility and inherited their office from their maternal uncles. Neophytes trained for 12 years under the direction of experienced priests. During this period, they lived in special buildings, observed a permanent fast—their food consisting mainly of maize mush and only now and then some meat—and were obliged to remain perfectly chaste. Their inauguration was celebrated with great feasts. At this time their ears and nose were pierced and the chief gave them a calabash of coca, symbolic of their office.

Priests lived in sanctuaries surrounded by many taboos. They ate parsimoniously, fasted at set periods, talked little, and often scarified their body. They slept little and spent part of the night chewing coca. They performed the ceremonies for the community and, in addition, frequently were consulted by people who sought divine advice or who wanted to be cured of disease, for they were also medicine men. They received the offerings which were buried or thrown in the lakes. The priests were maintained by the community, which saw to the cultivation of their fields and provided them with clothes. Although there was no hierarchy, the priest of Iraca enjoyed special prestige and authority; unlike his colleagues, he could marry.

The strict rules governing the training of priests among the ancient *Chibcha* survived among the *Ica* and *Cágaba*. *Ica* novices lived in isolation, were forbidden to speak to women, and, during their initiation, abstained from eating a great number of foods. Everything they ate had to be cooked in a pot made by a priest. Infractions of the taboos were atoned for by periods of complete fasting, confessions, and conjurations. Novices could marry but had to refrain even from touching their wives during the first year of marriage. The considerable influence of the priests extended to all the activities and phases of life. They ensured the fertility of the fields, consecrated houses and fields, and played a part in all the ceremonies celebrated at birth, first menstruation, marriage, and death. They led the dances and presided at all religious ceremonies. They also heard confessions and were consulted by individuals about future events.

In other areas of South America, the concept of priesthood was lacking, for the priestly function was assumed whenever necessary and to the extent required by the ritual by the less specialized shamans, whose principal functions were quite different.

### SHAMANISM

Outside the Andean area the religious life of the Indians centered on the shaman, for he was the intermediary between both the individual and the community and the supernatural world and led most of the ceremonies by which help and guidance were obtained from the spirits. Yet the shaman was not primarily a religious leader; his efficacy derived rather from his magic powers, which gave him control over spirits. By these means the shaman could cause and cure the ills and accidents to which all people were subject. His ability to learn about events taking place in distant places and to forecast the future often gave him an important voice in community plans; his command over spirits sometimes gave him a significant economic role. Because of his specialized knowledge, he often played a conspicuous part in life crisis ceremonies, and he could be in effect the keeper of tribal traditions and the upholder of the group's moral code.

Throughout South America, with the outstanding exception of the *Araucanians*, shamanism was a man's profession, though women were by no means entirely debarred. Nevertheless, their functions were rarely so inclusive as those of their male colleagues for in most cases women were restricted to curing. In a few tropical tribes (*Goajiro*, *Mojo*, *Itonama*, *Guaraní*), the number of female shamans seems to have been as large as that of men. Among the *Apapocuva-Guaraní*, women who had been blessed with chants not only healed but also danced and prophesied, but they never were credited with sufficient mastery of their art to rank with the great shamans who conducted the harvest festival and were the heads of their tribe. Some *Ona* female shamans acquired fame for their cures, but very few emulated the exploits of men.

The few scattered references to the character of shamans describe them as particularly gifted, intelligent men; there are hardly any allusions that could lead one to consider them neurotic personalities.

But here again *Araucanian* shamans are exceptional, for during the 17th and 18th centuries they generally were recruited among berdaches and persons afflicted with mental or nervous disorders. Any boy who seemed delicate or effeminate was dressed as a girl, and from an early age prepared for his future profession. It is not unlikely that Spanish influence contributed to the change that took place in the 19th century from transvestites to women shamans.

**Vocation.**—Our information about the circumstances that prompted a young man to begin shamanistic training is not so complete as one might wish. The profession was frequently hereditary owing to the natural desire of a man to transmit to his son or another close relative a profession that was both remunerative and esteemed. Among the Indians of the Putumayo area the shaman gave preference to the most hairy of his children. Hairiness seems to have been an important attribute of shamans who, unlike most Indians, never depilated themselves. (It also should be recalled in this connection that spirits often were pictured as hairy men.) In some tribes the shaman himself selected among the children of the village the one whom he wished to be his successor; among the *Apinayé*, he had first to obtain the permission of the parents. However, the inheritance of the office was a tendency rather than an absolute rule, for nothing prevented a young man who had a vocation or who had the means to pay for his training from becoming a shaman. Indeed, inheritance could not be an indispensable prerequisite in societies that attached such importance to mystic revelation and to calls from the supernaturals, which could come to anyone at any time.

In a great many tribes from the Guianas to Tierra del Fuego, the young man made his decision after being called by some supernatural being, spirit, or ghost. The elected one suddenly had a vision during which he saw mysterious things, generally animals, and finally a spirit. At that moment he fell prey to strange sensations and usually began to chant a song revealed to him by the spirit. The notion of a divine call was particularly strong among the Tierra del Fuego Indians and the *Araucanians.* Among the latter, female shamans even disclaimed any desire to enter the profession and considered that they had been forced to practice their art by a spirit or the Supreme Being. The shaman often reminded her familiar spirit or God that he had to assist her because he was responsible for her calling. In the Chaco the belief also prevailed that all shamans were chosen by a spirit who appeared to them suddenly. The supernatural call manifested itself in unusual agitation, trembling, and peculiar behavior.

Among the *Apapocuva-Guaraní* shamanistic power was bestowed by the dead, who taught chants to relatives whom they favored. The tribe was divided into four groups with different degrees of magic power: those who had no magic chants; those who had a chant for their own exclusive use; those who had enough chants to practice medicine and to lead religious dances; and, finally, at the summit of the hierarchy, those who excelled in their art.

*Sherente* shamans were recruited among those who had had a vision of the anthropomorphized planet Mars. *Bororo* shamans were divided into two categories according to the nature of the spirits by whom they had been called.

In the rest of tropical South America details about supernatural calls are rare. The preliminary steps toward entering the profession seem to have been taken by the young man himself, who subjected himself to various mortifications to provoke the initial vision which put him in touch with the supernatural world. This second type of initiation into the shamanistic career differs from the first principally in the mechanisms that were set to work to create contact with the supernatural.

**Initiation.**—In addition, a distinction must be made between the techniques used to obtain visions and the initiation into the art, though these two aspects of the shaman's formation generally were simultaneous. In the shamans' schools in the Guianas, all kinds of devises were used to provoke a state of hallucination in the novices. They fasted, danced, and drank tobacco juice until at last they saw spirits who taught them the magic chants by which the spirits could be freely summoned. On the upper Amazon, where shamans took ayahuasca, a strong narcotic, to be transported to the land of the spirits, tobacco juice was poured into the candidate's eyes during the initiation to make them clear-sighted. As a final ordeal, a frame holding ants or wasps was applied to the initiates' body or limbs to give them strength and skill.

One of the main purposes of the initiation was to provide the candidate with the weapons of his art. Invisible darts, stones, or mysterious substances were injected into the body of the initiate by his instructor; these he later used to cause illness and to kill his enemies. *Toba* novices stood in a line and were hit by the shaman with a stick which penetrated and remained in the body. The Guiana shaman placed a spirit stone in the mouth of his disciple and then drew it through his shoulders and arms "in order to make the tube in the arm through which the shooting is done" (Gillin, 1936, p. 173).

**Training.**—The confusion between the initiation rites and the period of actual training has resulted in many discrepancies in our sources in the estimate of the time needed by a novice to become a full-fledged shaman. In many Guiana tribes (*Arecuna*, *Taulipáng*, etc.) the apprenticeship is said to have lasted from 10 to 20 years; but among the *Karima Carib*, the *Suisí*, and *Ipurina*, a novice could acquire his title within a few months. Among the *Karima Carib*, the candidate absorbed the essential knowledge within 3 months. When the training period extended over many years, it must be assumed that the future shaman assisted his teacher from childhood.

Even when the call came unexpectedly, the elected one could not immediately begin to practice his art. He had to learn how to summon his familiar spirit and had to establish a permanent bond with it. Moreover, the techniques which he employed conformed to traditional patterns and could be mastered only after training in their use. Shamans who claimed that their knowledge derived solely from their relationship with spirits, probably glossed over the arduous months or years of apprenticeship in order to stress the mystical aspects of their career.

Very often, as among the *Ona*, the very spirit who selected the man was said also to be his teacher. *Campa* apprentice shamans also disclaimed receiving their training directly from a human teacher, and feigned to learn their art from the soul of a dead shaman. As they put it, the shaman's soul appeared to the novice in his sleep and persuaded him to practice shamanism; if the man consented, the soul repeated its visits every night to instruct him in all the necessary skills.

The *Okaina* and *Muenane* also were said to have no living teachers. A man became a shaman from the moment he received a soul in his body. *Chébero* medicine men were trained in their art by an owl.[3]

In other cases the candidates were trained by experienced shamans. In addition to learning their art by assisting and observing their teacher, the apprentice shamans frequently had to undergo various ordeals that placed them in the group of those who could deal with the supernatural world.

> A young *Galibi* who wished to dedicate himself to being a piaye, placed himself under the rule of an old piaye to whom he was completely devoted and who trained him for a laborious and austere existence. [Barrère, 1743, p. 217.]

*Yahgan* novices, after their supernatural call, were trained by older shamans and also went to an assembly of shamans which was held for several months. During their attendance at the school, the candidates lived in seclusion and were required to fast, sing, and maintain a certain posture; at the same time, they were taught medicine and the techniques of their office.

The ancient *Araucanian* shamans also were secluded for a long time in caves or secret places, and were consecrated in a solemn feast. In modern times the machi learned chants, drumming, and the rituals of various ceremonies before they were received as full-fledged shamans in a very solemn ceremony. The rites performed on this occasion had as their purpose the establishment of a symbiosis between the novice and sacred trees; they also symbolized the transmission of magic power from the teacher to the pupil. Moreover, the candidate went through the exact medical treatment that she later performed on her patients.

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[3] These instances of miraculous training without a human instructor are cited by Tessman who, unfortunately, is not always a reliable authority.

While serving his master as an assistant, the novice learned to recognize the herbs and magic substances utilized in curing. He progressively familiarized himself with the ritual gestures and learned the technical aspects of his profession, such as the imitation of bird and animal calls and, if he had the necessary gift, ventriloquism. To this knowledge he added the memorization of chants, magic formulae, and sometimes the traditional lore of the community. Astronomy could also be part of his curriculum. Shamans emerged from their training period equipped not only with the magic techniques that permitted them to get in touch with the supernatural at will, cure their patients and destroy their adversaries and the enemies of their clients, but also with a fund of practical knowledge. They became acquainted with curative herbs and drugs and were able to perform simple surgery. Their knowledge of natural phenomena helped them to make predictions based on actual observations.

**The power of the shaman.**—The shaman's power rested on his ability to summon a spirit that could perform tasks beyond the capacity of ordinary people. The spirit called by the shaman sometimes was his own soul, which he could detach from his body; for instance, shamans sent their souls to investigate events taking place in far away places or to consult with the dead or other spirits or gods. *Mataco* shamans sent their souls to the Sun in the guise of birds. There was a widespread belief that a shaman's soul could enter the body of a jaguar or could actually turn into a jaguar in order to make itself frightful.

In other cases shamans were assisted in their endeavors by spirits that were ghosts, sometimes the souls of dead shaman, animal spirits, or spirits that took animal forms. *Taulipáng* shamans were helped not only by the ghosts of dead shamans but also by the spirits of various plants and animals. One shaman could have several familiars at his disposal.

The shaman's power often was identified with his breath or with tobacco smoke, which materialized his breath and added to it the efficacy of tobacco. The purifying and strengthening power of breath and tobacco smoke played an important part in magic treatments and other magic rites.

The shaman's power also has been described by some authorities as a mysterious substance which the magician carried in his body. The gestures of shamans during their magic operations suggested that they were handling some invisible stuff which they removed from the patient's body or transmitted to persons or even things to enhance their excellence. The *Apapocuva-Guaraní* shamans, for instance, were given a substance by the spirits which, in turn, they could communicate to other people to increase their vitality. Nimuendajú, who watched a shaman passing his magic strength on to a new-born child, tells us that the shaman removed it from his body as if it were a garment. Similarly, the *Shipaya* shaman gave his "sleep" to his disciple—that is to say, his power to get in touch with spirits—by pretending to break an invisible belt which he then tied around the waist of the novice.

There is no basic difference between the magic substance—an invisible but tangible stuff—and the arrows, crystals, and thorns that sometimes lodge in the shaman's body. These objects really are materializations of the shaman's power that is sometimes conceived of in the more abstract and vague form of "magic substance." The guardian spirit or familiar of the shaman likewise is a personification of the same power rather than a different entity coexisting with the notion of invisible substance. Magic substance, pathogenic objects, and guardian spirits are three different aspects of the same fundamental but vaguely conceived notion of magic power.

Some concrete examples may illustrate the point. Among several tribes of the upper Amazon the magic substance is closely connected with invisible thorns and darts which are soaked in it.

There is also association between crystals and magic force among the *Cubeo*, where the shaman put into the head of the novice small pieces of crystal that ate up his brains and eyes, replacing these organs and becoming his "power."

The rock crystals also are spirits. According to the Barama *Carib*, each category of spirits was represented by a different kind of stone, the possession of which ensured to the shaman power over the class of spirits identified with the stones. Toward the end of the initiation, stones were passed from the novice's mouth through his arms to open a passage for a magic missile. The crystals and spirits are identical. The magic weapons are endowed with life, for after performing the task assigned to them, they return to the shaman's body.

When a *Yaguá* shaman died, the darts in his body went into the person of a disciple. If a shaman had no heir, the darts flew in the air until they found a shaman into whose body they could enter.

**Techniques used by shamans to send their souls away or to conjure up spirits.**—Most South American shamans put themselves into a state of trance in order to enter into contact with the supernatural world. In the Guianas, trance was provoked by drinking a decoction of tobacco juice; on the upper Amazon, ayahuasca served the same end. *Tupinamba* shamans smoked until they swooned; *Mataco* and *Vilela* shamans took snuff made of sebil seeds (*Piptadenia* sp.). The soul of a *Taulipáng* shaman remained in the land of the spirits until the tobacco juice in his body dried.

Conjurations of spirits usually took place at night in a hut vacated by its inhabitants or in special huts built for the purpose. *Tupinamba* shamans, for instance, retired to small cabins where they were visited by the spirits; the people stood outside asking questions which the spirits answered in a "whistling voice."

**Shamans' accessories.**—The shaman's accessories were few and simple. In most South American tribes from the Guianas to Chile, the rattle was the symbol of the office. The grains inside not only were sacred but actually were materializations of the spirits and the sound of the instrument was their voice. The rattle was a source of power and sanctified the smoke blown through it.

The bench used by Guiana shamans was second in importance to the rattle; it was often carved in an animal shape suggesting the type of spirit consulted by the practitioner. A bundle of leaves was sometimes used by shamans (Guianas, *Tereno*, *Mbayá*) when they summoned spirits; the audience interpreted the rustling noise as a sign of the spirits' presence. Shamans also used feather bundles to sweep off evil spirits during their cures (*Mbayá*, *Tereno*).

Among the *Araucanians*, the shaman's most important accessory was the flat drum, which she beat to put herself into a state of trance. In appearance the instrument is very like the North American and Siberian shaman's drum, and its use was almost identical. In ancient times, the bouncing of the drum was a characteristic shamanistic trick. The use of the flat drum was restricted to the southern part of Chile. It is one of several traits linking the *Araucanians* to North America, which seem to have followed the Pacific Coast long before the development of the high cultures of Perú.

**The shaman as a healer.**—The idea that diseases are due to natural causes usually is said to have been foreign to South American Indians. Instead, they are thought to have believed that all ills, even accidents caused by clumsiness, had a magic origin. But light and common ailments and the sicknesses introduced by the Whites often were regarded as natural and were treated with drugs rather than by shamanistic means. Nevertheless, most diseases and serious illnesses were attributed to one of two causes: either the patient had been struck by an invisible missile shot by a sorcerer or spirit, or his soul had been kidnapped or had fled.

The technique of shooting a victim varied somewhat in different regions. In some cases the shaman sent his soul to hurl the invisible dart; in others his soul or familiar spirit assumed an animal guise to carry out the misdeed. Sometimes spirits or demons acting of their own accord attacked a person and caused him to fall ill; plant and animal spirits were especially prone to take revenge in this manner.

A person also could fall ill because his soul had been kidnapped by a sorcerer or spirit or because it had fled the body as a result of a sudden fright. The theory of soul loss was very common in the Chaco, where it co-existed with the concept of intrusion by a pathogenic agent. It was formerly held that the belief in soul loss was foreign to the forest tribes, but evidence of its occurrence continues to turn up as the peoples of the area are better studied (*Caingang*, *Apinayé*, *Omagua*, *Itonama*, *Cocama*, *Tucuna*, *Taulipáng*, *Witoto*, *Botocudo*).

Whatever the shaman's diagnosis, the treatment of the sick was practically identical from the West Indies to Tierra del Fuego. The cure consisted essentially in massaging, blowing, and sucking the patient. Very often the shaman rubbed him with saliva and blew tobacco smoke on him. After some time he removed that cause of the evil: sticks, thorns, or insects. If the agent was a magic substance, he made gestures as though he were removing some sticky but invisible mass. In cases of soul loss, the shaman sent his own soul after it; if it succeeded in recapturing the victim's soul, the shaman placed it back in its bodily envelope.

North of the Amazon the treatment was accompanied by spirit consultations. Plunged in a trance, the shaman went to the land of the spirits to consult them or to challenge the soul of the sorcerer who had caused the trouble.

After the treatment the shaman prescribed a diet and drugs that often were taken not only by the patient but also by his close relatives.

The treatment of diseases among the ancient and modern *Araucanians* was extremely complex and included rites unknown elsewhere in South America. For example, the shaman, during a trance induced by dancing and beating her magic drum, "extracted" the patient's viscera. In modern times, female shamans recited long prayers and magic formulae and, after climbing to the top of a ladderlike post, fell into a swoon.

When diseases and other misfortunes beset the whole village, manifesting the uncanny presence of spirits, it was the duty of shamans to drive the evil out. During an annual feast, *Witoto* shamans expelled the souls that carried ailments.

**Other shamanistic functions.**—Although the practice of medicine was the shamans' main function, it seldom constituted their only activity. In particular, it was the duty of shamans to watch over the welfare of the group and to ward off attacks of evil spirits. Since the wrath of the spirits often was provoked by violations of taboos, shamans had to prevent such transgressions, and so were in effect the guardians of the religious and moral traditions of the group. They were also the organizers of magico-religious feasts and were dance leaders.

The shaman often played a considerable part in the economic life of the community. Sometimes he went into a trance to discover the whereabouts of game animals or shoals of fish; with his magic power he could drive animals within the range of hunters' arrows. He also performed fertility rites on behalf of the community and summoned the spirits presiding over the growth of plants. When offerings or sacrifices were made to the spirits, it usually was the shaman who called them and presented the community's request.

The shaman played a decisive role before a war expedition. On such occasions he fasted and went into a trance to consult the spirits in order to learn from them the military dispositions of the enemy. His magic performances were believed to be powerful instruments of victory. When the *Chébero* went to war, their shamans lived in seclusion and fasted for several months. Military disasters were blamed on their negligence.

Shamans sometimes claimed to control weather and other natural phenomena. They could cause rain to fall or, on the contrary, could dissipate storms (*Tapirapé*, *Carajá*). They often were asked to intervene when the Indians felt threatened by some natural event like an eclipse (*Ona*, *Tupinamba*, *Mundurucú*), or the fall of meteors (*Bororo*). *Ona* shamans protected children from being devoured by the moon.

Shamans also had a hand in the administration of justice, for whenever misfortunes or deaths were attributed to witchcraft, the shaman was called upon to unmask the sorcerer, who was generally savagely killed.

Many private rites intended to ensure the well-being of the individual were performed by shamans. They pronounced charms at critical stages in the individual's life, i. e., at birth or puberty, at death or funerals. By their art they ensured the fecundity of women (*Tapirapé*, *Shipaya*), identified the souls reincarnated in the newborn (*Apapocuva-Guaraní*), or chose auspicious names (*Arawak*). The shaman was almost always a trusted adviser.

**Payment of shamans.**—Only among the Fuegian tribes did the shamans receive no material recompense for their services. In most tribes in which division of labor hardly existed, the shaman was the only specialist and the only person who could acquire wealth by his activities, for as a rule he was paid for his services. The compensation usually consisted of things like knives, combs, urucú, a hammock, bows, and arrows. The *Chébero* gave their shamans part of the war booty and some of the captives. Fees often were demanded in advance of treatment, which might be refused if the patient's family was too poor to pay. They were payable even when the patient died. *Toba* shamans rationalized their insistence on the ground that the spirits would punish both the practitioner and his patient for a lack of generosity. *Araucanian* women shamans received rich fees; sometimes they claimed that the amount demanded had been supernaturally revealed. *Abipón* shamans were the wealthiest members of their tribe.

Shamans often were paid by their disciples too. If to these revenues one adds the presents given them by people who feared them and the services rendered by their many wives, one may get an idea of the prosperous circumstances of some shamans. When a *Tapirapé* shaman grew too wealthy, he was forced by public opinion and under threat of losing some of his prestige to distribute part of his property.

**Authority and prestige of shamans.**—The supernatural power of the shaman and the importance of his functions gave him considerable authority and prestige. Most shamans were respected and feared. Veneration reached a peak among the *Tupinamba* and *Guaraní*, who received famous shamans into their villages with extraordinary manifestations of respect and gratitude. Sometimes they even went to the extreme of cleaning the paths such a shaman was to follow. The ancient *Guaraní* worshiped the bones of famous shamans, which were kept in huts in luxurious hammocks covered with feather capes. People came to make offerings and to consult them as oracles.

The reputation of clever shamans in tropical South America went far beyond the limits of their own community. Legends crystallized around the personality of a shaman who impressed his people with his ability, and countless miracles were attributed to him. Some shamanistic accomplishments were based on tricks and sleight-of-hand performances. The *Bororo* claimed that some of their bari could chew up tapir bones and drink boiling water. *Apapocuva* shamans took honey out of closed sections of bamboo. *Guajajara* shamans, possessed by the frog spirit, swallowed embers. *Tereno* piai extracted feathers from their skin, swallowed arrows, and even "removed" limbs. Fire walking was a common performance by shamans in the Chaco and Tierra del Fuego.

Despite their considerable influence, the functions of shamans were, as a rule, independent of those of chiefs. However, there are many instances of chiefs who were at the same time powerful shamans. Their authority was especially conspicuous among the *Guaraní*, who often were ruled by shaman-chiefs. Among the *Taulipáng* and *Carib* tribes, shamans often had more power than the chiefs.

**Shamans as sorcerers.**—Since shamans were by definition "carriers of invisible arrows or magic substances" they were provided with powerful weapons that could be used as well for good and evil. Without his negative power, the shaman could not be a doctor. A shaman who used his weapons only to attack enemies outside the community would have a good reputation and would be regarded as the best servant of the group. It was only when he turned against members of his own group that he provoked hatred, distrust, and, in the end, sometimes revenge.

The magic substance which was the shaman's strength and which he used to heal and strengthen his clients, became a mortal weapon when it was turned against an enemy. "The power of the shaman is identical with the poison" that kills. The *Guaraní* shaman struck at his foes by casting into them the magic substance recovered from the body of his patients. The *Chiquito* shaman carried in his stomach a blackish substance which was fatal to those in whom it was injected with criminal intent.

Shamans also practiced rites of imitative and contagious magic on the exuviae of their victims. Moreover, shamans could change themselves into dangerous animals, especially jaguars. The belief in werewolves was very strong in most South American tribes.

In the Guianas, criminal acts classified as kanaima cover practically all kinds of black magic, though certain authors have reserved the use of this term for a mysterious fraternity of avengers and criminals. The concept of kanaima is, however, very much more inclusive. When epidemics swept through the land, when several sudden deaths caused terror, or when a person died of a slow wasting disease, the Indians spoke of kanaima. Kanaima may be many things. It may be a person, an avenger who follows his victim for many years, or a murderer who performs his misdeeds at night. It may be a real or an imaginary tribe, or, in fact, any secret enemy, any ghost against whom there is no defense. Kanaima is also every disgrace and misfortune and, in addition, the desire for revenge that overtakes a victim and forces him to do something dreadful (Koch-Grünberg, 1923 a, 3:216–217).

The punishment which the Indians meted out to witches was proportionate to the fear with which they regarded them. The most cruel acts committed by Indians were always those against shamans who had forfeited their trust. The *Campa* not only slaughtered the guilty shaman, but also his family, and destroyed his goods.

**Shamans as priests.**—In the strict sense of the word, a man was a shaman only insofar as his relationship with the spirits was of a personal nature, and his actions were determined by immediate circumstances rather than by formalized religious tradition. The shaman served his community because of his supernatural power, not because he was a man invested with functions specified by a traditional cult. Nevertheless, because of his magic powers, it was the shaman who could best act as intermediary between the community and the supernatural world, and so he sometimes functioned as a religious leader for the group.

Where Andean influences were felt, the function of the shaman was developing toward that of the priest. The best examples of this sort of shift in emphasis and role are found among the *Mojo* and the *Manasí* of eastern Bolivia (Métraux, 1943 a). A similar change seemed to be taking place among the *Taino* of the West Indies.

*Mojo* shamans presented offerings to the gods and prayed and fasted for the community, but they also were possessed by spirits and cured patients just as shamans did in the rest of tropical South America.

*Taino* shamans were simultaneously priests and medicine men. They presided over the cult of the zemi and organized religious ceremonies; they distributed the cassava offerings, which the people kept as talismans. In addition, they treated people by sucking, blowing, and the other methods common to their Guiana colleagues.

Among the *Araucanians*, the machi, or female shamans, played an important part in the ceremonies (ngillatuns) celebrated to ask favors of the supernaturals.

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## LORE AND LEARNING

# NUMBERS, MEASURES, WEIGHTS, AND CALENDARS

By Wendell C. Bennett

### NUMBERS

Throughout South America, only the decimal system, developed in the Central Andes, and the vigesimal system, probably borrowed from Central America by some of the northwestern groups, can be properly described as numerical systems. Elsewhere, the use of numbers was extremely limited, and the precise determination of quantity was rarely of major concern to the individual. In southern South America, for example, the *Ona* had units only up to 5 (although some authorities claim 6), and a separate number for 10. Other groups in this region were equally simple, except for the Indians of the Pampas and Patagonia, who borrowed the *Quechua* number system in historic times. In East Brazil, the number system of the *Northwest* and *Central Ge* is described as extremely limited, and a similar situation is found in the Chaco. There the *Chorotí*, although said to have had numbers from 1 to 9, rarely used anything more than 4 in actual practice.

In the Tropical Forest region, all native groups are similar in their simple system of numbers. For example, the *Waura*, *Camayura*, and *Trumai* have numbers up to 4, and use a general word meaning "hand" for the number 5. Since counting is done with the aid of the digits, numbers above 5, when used, are expressed as combinations of the basic terms. The *Bacaïri* of the upper Xingú have numbers from 1 to 3, but the last is rarely used, since the combination of 1 plus 2 can be substituted. The *Nambicuara* likewise form higher numbers with combinations of 1 and 2. In the Guianas, groups like the *Rucuyen* have numbers for 1 to 3 only, and throughout the Orinoco region, numbers above 5 are composed of the word for "hand" plus the 1-to-5 terms. The *Tupinamba*, along the Atlantic Coast of Brazil, in spite of a rather complex culture, used numerals only up to 5. The *Witoto* of the northwest Amazon area rarely count beyond 5, in a series which runs: "1," "2," "2-plus-1," "2-plus-2," "hand." In recent times, the

*Goajiro* have borrowed Spanish numbers for higher calculations. In their own language, they have numbers from 1 to 10, although in some groups the term for 9 is missing. All of these tribes, to be sure, have many quantitative adjectives which express large collective units. The nature of their culture rarely demands precise count of any magnitude.

The *Quechua* language of the Central Andes contains a complete vocabulary of numbers in a decimal system. The antiquity of the system is unknown, but probably the complex civilizations which had long existed in this area of the Andes were able to express precise counts in the higher number brackets. Some authors have suggested that the *Inca* emphasis on numbers made their political system possible, particularly in the absence of writing. In any case, it is known that the *Inca* kept precise counts on their quipus of many economic and demographic aspects of their Empire. The Empire itself was arranged in a political pyramid based on decimal units, named in accordance with the number system.

The *Quechua* numerical system has distinct names for the numbers from 1 to 10 (in which 5 is "pichca" and 10 is "chunca"), for 100 (pachaca), for 1,000 (huaranca), and for 10,000 (huno). Intervening numbers are combinations very similar to English formation. For example, 11 is 10 plus 1, 12 is 10 plus 2, 20 is 2 tens, 30 is 3 tens, etc., and numbers above 100 are expressed in similar fashion. The neighboring *Aymara* have a number system very similar to the *Quechua*, although for the most part with words in their own language. Again the system is decimal, and has numbers from 1 to 1,000, expressed by combinations of terms. Today the *Aymara* simply call any quantity above 1,000 as "uncountable thousand." That some of the higher numbers may represent *Quechua* influence is indicated by the terms "tunca" for 10, "pataca" for 100, and "huaranca" for 1,000.

The *Quechua* number system was taken over by some of the neighboring groups in historic and perhaps prehistoric times. The *Colorado* of Ecuador have borrowed many of the number terms. The *Araucanians* of Chile and the *Tehuelche* of Patagonia use the *Quechua* terms for 100 and 1,000. The *Puelche* are said to count up to 100,000, using *Quechua* terms for all numbers above 99. However, it is highly dubious that the *Puelche* in pre-European times had native names for numbers up to 99.

The *Cuna* of Panamá have a decimal-vigesimal system probably borrowed from Central America. The numbers run from 1 to 10; then 10-plus-1, etc. up to 20, called "tule"; but 40 is expressed as 2 twenties. The *Cayapa* of Ecuador have a system which is neither decimal nor vigesimal. It is described as a quinary-decimal-centenary system. There are numbers for 1, 2, and 3; 4 is expressed as 2-twos;

5, 10, 20, and 100 are distinct terms. The numbers in between are expressed by term combinations. The *Coconuco* of Colombia are reported to have counted in groups of 7 units, but no details of the system are known.

## MEASURES

Outside of the Andean region, units of measure were as limited as the number systems. Within this category of measures, units for distance, for quantities, either dry or liquid, for dimensions, such as length, width, and height, for area, and for weight are included, but measures of time are treated separately. From an objective point of view, the cultures of the Southern Hunters and of the tropical Amazonians had little need for precise units of measure. House building is a possible exception, but even in this a rule of thumb is about as practical as a precise fixed unit. Otherwise, measures of quantity, weight, and size were essentially pragmatic in such matters as barter, division of a catch, and the like.

**Distance.**—Outside of the Andean region, no precise measures of distance were employed. Distance was expressed in terms of time, such as the *Goajiro* and Guiana tribes' estimate of the number of days required to travel to a certain location, or how much change in the sun's position would occur before a certain point was reached. However, the *Inca* and the *Aymara* had formal measures of distance. The basic *Inca* unit was the pace (thatkiy), which was actually the equivalent of 2 steps or about 4 feet. Six thousand paces constituted a topo which is the rough equivalent of 1½ Spanish leagues or about 4½ miles. This measurement was employed in road building and topo markers were set up like milestones. The *Inca* also had a term, "wamani," said to be a unit of 30 topos, which may have been used as a measure of distance. The *Aymara* topo, estimated by some authors as the equivalent of about 5 miles, was probably borrowed from the *Inca*.

**Quantity.**—In South America, trade was generally by barter in which equivalents could be judged by eye. Consequently, nowhere were measurements of quantity, either dry or liquid, well developed. Among many tribes, such as the *Witoto* of the Northwest Amazon, the handful was the only general measure of quantity. Even the *Inca* had no standard liquid measure. However, a large calabash, or a box of wood or silver, was used as a dry measure for grain. The unit was called "cculu" or "phoqca" and, although not very exact, it has been estimated to be the rough equivalent of one-half a Spanish fanega, or, about 26 quarts. The *Aymara* measured quantity by single and double handfuls, and used sacks of more or less uniform size for measuring vegetables. The *Aymara* term "topo (tupo)" is said by some to have been used as a dry measure unit of about 1½ bushels, or a wet measure of about 12 gallons. The *Araucanians* of Chile have liquid measures for a pint, a quart, and 6 quarts, although the antiquity of these is highly dubious.

**Dimensions.**—The measuring units for dimensions were commonly based on parts of the body. For example, the *Witoto* of the upper Amazon used foot-length and finger-length units; the *Cuna* of Panamá used hand-span and arm-length units; and the *Araucanians* used hand-, foot-, face-, and arm-length units.

The *Inca* measurements were also based on body parts but became standardized. The smallest unit was probably the finger length, although this is not specifically mentioned. Others were the distance between the outstretched thumb and forefinger, called "yuku" (about 5 to 6 inches); the span, called "k'apa" (about 8 inches); and the cubit, "rhococ" (about 18 inches). The standard land measurement was the fathom, called "rikra" (about 64 inches), which was in turn divided into yards, called "sikya." The *Aymara* measures are generally similar to the *Inca;* namely, the finger length; the width of the hand, including the thumb; the distance between outstretched thumb and index finger; the distance between outstretched thumb and little finger; the distance from the sternum to the tip of the outstretched right hand; and the distance between fingertips of both outstretched arms.

Measuring sticks or rulers are rare. The Guiana tribes are said to measure their house ground plans with poles cut to proper length by eye estimate, but the length is not standardized. The *Inca* did standardize the fathom length and kept a special measuring stick at Cuzco as a legal check. The *Inca* also used a sliding rule of two sticks, in which one was slid along the other until their combined lengths exactly filled the space to be measured.

**Area.**—Only the *Inca* and the *Aymara* had measurements of area. In both cases, the unit was the topo, which has been previously mentioned as a term for measurement of distance, and of quantity. Although everyone agrees that the topo was a measurement of area, and although the term is still in use today, there is little agreement about the actual size of the unit. Some of the early accounts state that the *Inca* topo was about 25 by 50 fathoms, or the equivalent of $\frac{8}{10}$ of an acre. Others say it was a variable unit, such as the amount of land which would support a couple and their minor children, or the amount of land which could be cultivated in a day by a team of 3 agricultural workers. In the Colonial Period, the topo was about 50 by 60 paces. Today the size of the topo varies regionally. Near Cuzco, 22 by 44 fathoms is fairly standard, but around Arequipa it is somewhat larger. The *Aymara* topo is said to be the equivalent of 2.4 acres, which would make it considerably larger than the *Inca* unit.

**Weight.**—In view of the limited number of quantity measurements, it is not surprising that standard systems of weights were undeveloped. For most tribes of South America it can be specifically stated that there were no standard weights. The modern *Aymara* have no native measures of weight and even the *Inca* probably had no fixed units. The steelyard, or lever balance, is said to have been used by tribes on the Coast of Ecuador for weighing, and it is possible that the *Inca* also knew this device. However, the only weighing device which is definitely known is a balance-beam scale or a pan balance.

Balance beams have been found in *Inca* and pre-*Inca* sites on the Coast of Perú. They are also mentioned for the *Aymara*, but their antiquity for this group is questioned. The beams consist of a narrow, rectangular piece of bone or wood about ¾ of an inch in width and seldom over 6 inches in length. The bar may be elaborately decorated with incised or carved figures of animals or birds. Holes are drilled through the center and at each end. A suspension cord is threaded through the central hole and small bags or small pottery bowls are attached to each end. These balance beams could only have been used for weighing very small quantities, and if any standard counterweights were used, they have not been discovered. Possibly, the balance beams were only used for weighing such precious materials as gold dust.

## TIME DIVISIONS

All Indian groups in South America recognized some divisions of time, particularly of such basic units as the year, the month, and the day. Such divisions, if sufficiently formalized, could be called a calendar. However, in this discussion, simple time divisions and calendrical systems are distinguished. In this definition, a calendrical system consists of a series of formally recognized year divisions, which are cross-checked by observation of astronomical phenomena. The distinction is not always easy to maintain. In general, agricultural peoples everywhere in South America correlated their planting activities with the seasons and other year divisions, and commonly had ceremonies associated with the major turning points. However, in spite of this interest and awareness of time divisions, few groups formalized their units sufficiently to give them names, or to keep track of those which had passed. In fact, in terms of the somewhat limited knowledge of this aspect of native cultures, few groups besides the *Inca* and *Aymara* can be said to have true calendrical systems. The fact that no method of recording calendrical events has been identified in South America makes the interpretation of archeological evidence on this point exceedingly difficult. In the following pages, the simple time divisions, together with minor references to space divisions, are first considered, followed by a description of the calendrical systems.

**Space divisions.**—The recognition of the cardinal points is a common occurrence in ceremonies everywhere, and it is not unusual for a zenith and nadir to be added to the ceremonial directions. Other concepts of space division are rare. The *Nambicuara* are said to conceive of the world as divided into two sections perpendicular to each other, one corresponding to the movements of the sun, and the other to the direction of the main waterways.

**Year divisions.**—The estimation of the year among many tribes of the Amazon and southern South America, was based only on the recurrence of specific seasons. This is obviously not an accurate way of determining an annual unit. In some regions, the contrast in seasons is marked, and little difficulty is encountered in observing their successions. In others, like the Guianas, only minor changes in the leaves of the trees mark the different seasons. A more accurate way of deter- *Northwest* and *Central Ge*, and for the pre-*Inca* Chimu. A year based on the movements of the stars, particularly the Pleiades constellation, is reported for some tribes in the Guianas, for the *Tupinamba*, for the *Northwest* and *Central Ge*, and for the pre-*Inca Chimu.* A year based on observation of the solstices was known to the *Araucanians*, *Inca*, *Aymara*, and perhaps other groups of the Central Andes.

The division of the year into seasons was common everywhere. Two seasons, basically a rainy and a dry, were recognized as important annual divisions by the *Northwest* and *Central Ge*, the *Nambicuara*, and by the tribes of the Central Andes and Northwest Argentina. In southern South America, the four seasons were recognized by the *Yahgan* and the *Ona*. The *Ona* considered winter and summer as major seasons, separated by the minor transitions of fall and spring. The *Yahgan* seasons were of about equal proportions. The *Araucanians* recognized the four seasons, and some authors state that they recognized six.

Undoubtedly, the lunar phases were observed by every group in South America, so that it might be said that the lunar month was universally recognized. However, not all groups bothered to keep track of the number of lunar months in a year, nor to name each one. On the other hand, the lunar month was the basis for anything approaching a calendrical system. The *Ona* winter season had six "moons"; their summer season but five. Each "moon" was given a descriptive name, such as "egg laying," "hatching," "guanaco pregnancies," "young guanaco," "moulting period," and the like. The neighboring *Yahgan* had descriptive names for eight divisions of the year, although these did not exactly correspond to lunar months. Some of the names are translated as: "the time when the bark is loose," "when the first birds' eggs are found," and the like.

**Month divisions.**—Although it is logical to suppose that the phases of the moon were observed, and thus served as divisions of the lunar month, such divisions were never formalized. Even the *Inca*, with their close attention to the calendar, had no regular month divisions. Some authors state that the *Inca* divided their 30-day month into three 10-day weeks, but the evidence is not conclusive. The individual days were, of course, accounted for in the system.

**Day divisions.**—Divisions of the day and night were estimated by the positions of the sun and the stars, but any formalized units are not common. The *Nambicuara* recognized 6 main stages of the day, based on the position of the sun. The *Yahgan* divided the day into periods of about 4 hours. The *Araucanians* are said to have divided the 24-hour day into 10, 12, or 15 parts. The *Inca* indicated the time of day by pointing at the position of the sun, and referred to elapsed time by the distance that the sun had traveled. Practical references were sometimes used to indicate small time units, such as the *Quechua* phrase "the time needed to boil potatoes," which indicates a period of about an hour.

## CALENDRICAL SYSTEMS

A certain amount of star lore is found among all tribes in South America, and everywhere some constellations are recognized and named, frequently after spirits. Some tribes determine the annual cycle by observation of the stars and the constellations. Others observe the movements of the sun and the moon for time divisions. The organization of such astronomical observations into a calendrical system is, however, rarely found. This may be due to the poor information available. The best material is on the calendrical system of the *Inca* at the time of the Conquest, and even this is very sketchy. Consequently, there are radically different opinions about the nature of the *Inca* calendar and the observations on which it was based.

Some authorities believe that the *Inca* kept a record of months and years on their knotted-string quipus. Some of the combinations of numbers on certain quipus do suggest time records. However, this would not be a recorded calendar but rather a form of mnemonic device for remembering past events. Many attempts have been made to demonstrate that the Andean people recorded calendrical dates. Some of the claims are fantastic, others more reasonable. It has been suggested, for example, that the low relief designs on the "Gateway of the Sun" at Tiahuanaco have calendrical implications. Such an interpretation is not illogical, since the stone-carving design is clearly of a religious nature and thus perhaps associated with a ceremonial calendar, but there is as yet no evidence that these designs represent a sequence of years with conventional symbols such as those on the *Maya* dated stones in Central America. Another much debated design is that found on the so-called Echenique plaque (fig. 186). This is a gold disk with hammered relief design. A feline face in the center is surrounded by a series of design units, some of which are repeated four times, others twice. Although the design is definitely not a recorded calendrical date it might well be a symbolic representation of the four seasons, or, as suggested by some, of the solstices and the equinoxes.

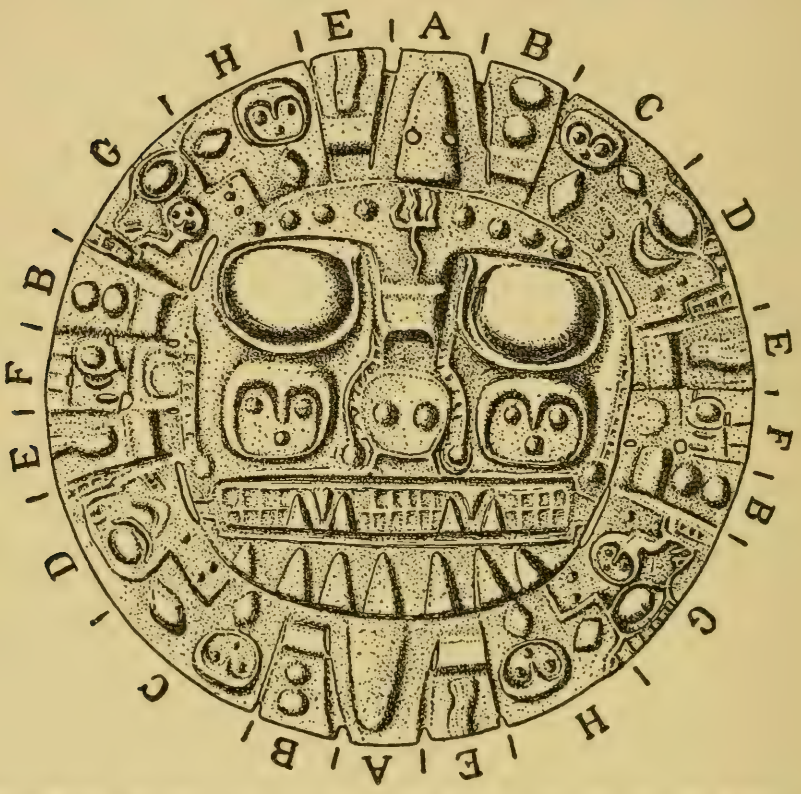


Figure 186.—The Echenique plaque. (After Means, 1931, fig. 164, from Saville.)

It is probable that the intensive agriculturists of the Central Andes were long interested in calendrical observations, and that ceremonies were linked with these. At least, by the *Inca* Period, the ceremonial calendar and the agricultural calendar were clearly related. Some of the early archeological temples are definitely oriented with the cardinal points, and some have suggested that these sites were used for astronomical observations. For example, it is claimed that the main temple of Calasasaya at Tiahuanaco has its eastern stairway situated so as to mark the equinox when observed from the center of the temple. It is likewise pointed out that the corners of the temple, when observed from the same spot, mark the solstices of the sun. Such work is interesting and suggestive, but will probably never lead to a reconstruction of the calendar.

In the *Inca* Period, certain specialists of the priest group made solar observations, but there is considerable confusion about the methods employed. One method, described by the chroniclers, made use of four (sometimes eight) small square masonry towers which were built in a row along the skyline. The two center ones were placed close together, the outside ones farther apart. Observations on the setting of the sun behind these towers were taken from a raised platform in the great square of Cuzco. When the sun passed the outside tower, about the month of August, it was time to sow the early crops. When, in September, the sun was framed by the two central towers it was time for general sowing. Some authors claim that such towers were used to observe the solstices. Others state that towers were erected along the skyline to mark the beginning of each month. Actually, there is little evidence that the towers were used for anything except setting the sowing dates and perhaps checking the basic lunar calendar. Some of the chroniclers state that the equinoxes were observed by the shadow of a pole set upright in a circular space. This suggestion has led to the identification of certain rough rocks as sun dials. The rocks are flat on top and have a short upright projection in the center. These rocks have been found at Machu Picchu and other sites and are called "intihuatana" (pl. 53, *bottom*). They may well have had some symbolic meaning, as part of the sun worship religion, but they could not possibly have served as sun dials, since the upright projection is too short, and the flattened surface is rarely horizontal.

The *Inca* calendar was based on observation of the movements of the sun and moon, but just how the two were reconciled is by no means clear. The solstices and equinoxes may well have been observed, but they do not stand out prominently in the calendar itself. The months were lunar and not exactly adjusted to the solar year. The discrepancy of 11 days between the 12 lunar months and the solar year may have been adjusted, as some authorities claim, by inserting 6 extra days at random throughout the year, and adding 5 days at the end of the year. Other authorities state that the calendar was arbitrarily adjusted when it was too far off.

The calendar was both agricultural and ceremonial. Each of the 12 months had a special name, each was associated with certain important festivals, and each was correlated with the agricultural cycle, in terms of planting, cultivating, rain, and harvest. The ceremonial calendar began in December, and descriptions of the celebrations can be found in volume 2 of the Handbook.

Knowledge of other calendrical systems is scanty indeed. The *Aymara* are said to determine the solstices by observing the position of the sun in relation to six geographic points, but it is specifically stated that the equinoxes are not observed. In all probability the *Aymara*, like the *Inca*, once had a lunar calendar, since it is known that the moon and its phases governed all aspects of their agricultural cycle. Cieza de León (1554) states that the *Aymara* had a year of 10 months, but this is not confirmed by any other writer. None of the month names has survived, but months were probably named after important events in the ceremonial calendar.

Scattered references to the Chimu peoples mention an annual cycle based on the time of appearance of the Pleiades, which constellation was also the patron of agriculture. This suggests a somewhat different type of calendar. In the Madre de Dios country, of the upper Amazon, the *Araona* and *Caverna* had a lunar calendar of 12 months to which a decimotercio was added every 3 years. The calendar was probably borrowed from the *Inca*. The years were counted by means of grains of corn and the moons were counted with pebbles. There is little direct information about any calendar for the *Chibcha* of Colombia, although it would be logical to suppose that it existed. The *Chibcha* had a September maize harvest ceremony, and two New Year's rites, one for the March and one for the June moons.

# MNEMONIC AND RECORDING DEVICES

By Wendell C. Bennett

## GENERAL

Nowhere in South America was there any type of phonetic writing in pre-European times. Numerous attempts have been made to interpret the designs on pottery, cloth, and carved stones as a form of writing. It is quite possible that such designs, as well as pictographs and petroglyphs, may have had symbolic meanings. In the Mochica Period pottery in Perú there are many illustrations of beans with painted designs, and actually beans with carved designs have been found (fig. 187). Larco Hoyle (1943) believes that these decorated beans may represent a type of conventionalized symbol, like ideagraphs, but he does not claim any type of rebus or phonetic writing.

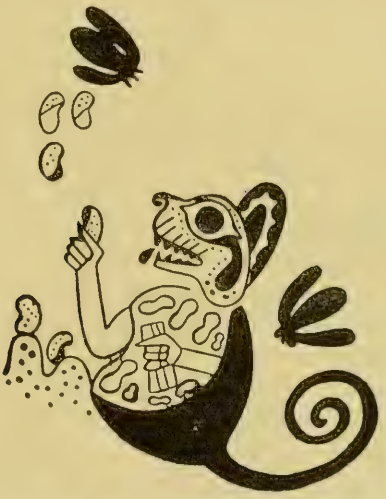


Figure 187.—Mochica painting of anthropomorphic feline being, apparently deciphering bean ideograms. (After Larco Hoyle, 1944 b, fig. 10.)

In the Colonial Period, a type of pictographic writing was developed by the *Aymara* of Bolivia, under Spanish influence. One or two interesting documents have been preserved and there are a few clay vessels decorated with these pictographic designs, but the system never enjoyed any extensive use. In post-Columbian times, many Indian languages have been recorded by the Jesuits and other scholars. However, few Indian groups, who have preserved their own cultural patterns, have adopted writing even under the stimulus of European contact.

In many parts of South America, the native cultures had no form of mnemonic or recording device. For example, the *Yahgan* and *Ona* lacked any type of knotted cords, notched sticks, or even inclined sticks to indicate direction of a journey. Elsewhere, except for the *Inca* and earlier Central Andean groups, the mnemonic and recording devices are not only rare but also quite simple. The cultures of the tribes in southern South America and in the Tropical Forest had little need for complex number systems, or for formalized measuring units, and it follows logically that complex recording devices would likewise be little needed.

## SIGNALS

Smoke signals were common in the unforested regions, particularly in southern South America. The tribes of the Pampas and Patagonia, the *Ona*, *Yahgan*, *Araucanians*, and others, all used conventional smoke signals. For example, the *Yahgan* would pile branches on the fire, causing a balloonlike smoke cloud to rise, and then extinguish the fire rapidly. One smoke cloud signified sickness or accident; two, grave emergency; three, death; four, discovery of a stranded whale, a situation which called for a general armistice and an invitation for all neighbors to come and feast. Smoke signals were also used by the *Inca*, although no details of the system are known. Signal drums are commonly employed by the *Witoto* and other tribes in Northwest Brazil, but they are also found as far north as the *Goajiro*. The drums are large logs which have been skillfully hollowed out by use of controlled fire, so as to leave only a narrow, irregular slit mouth. The short drum sticks have rubber heads. The principal use of signals is in connection with warfare, although it is also claimed that many types of messages can be sent. The drums are so constructed that four distinct notes can be sounded, and further variation is achieved by the length of the intervals between beats, and by loud and soft beats. The precise code of signaling is not known, but many travelers have been impressed by the intricacies of the messages conveyed. It is claimed that the drums can be heard for as much as 20 miles.

## MESSENGERS

Many tribes used messengers to convey information to neighboring groups, particularly in periods of warfare, but a formalized system of messenger runners was organized only in the Central Andes. The *Inca* were famed for their trained runners, the chasquis, who carried their messages. Along the principal highways which covered the *Inca* Empire, huts were built at intervals of something under a mile, and two runners were stationed at each. The message was either verbal or accompanied by a quipu, or other mnemonic device. One man took the message, ran to the next post, transferred the message to the next runner. The runners were trained from early childhood for this purpose, and it is said that the relays were able to cover a distance of as much as 150 miles in 1 day.

Many of the Mochica pottery designs depict running individuals dressed in special bird-feather costumes. Their capes flow out behind, and in one outstretched hand they carry a small bag. Almost all of these vessels also have decorated beans among the design elements. This had led Larco Hoyle to interpret the designs as evidence of an early system of special messenger runners. He also deduces that the bags carried by the runners contained the decorated beans, which is consistent with his suggestions that the beans were an ideographic writing system.

## MNEMONIC AIDS

Aids to the memory and simple counting devices are somewhat similar, but both are readily distinguished from calculating devices. It is not uncommon for primitive peoples to use some mechanical aid in memorizing long formalized rituals which must be letter perfect, but in South America, for example, the *Chorotí* of the Chaco, the *Apinayé* of East Brazil, and the *Cayapa* of Ecuador are said to lack any form of mnemonic device. Elsewhere, sticks may be so employed, especially sticks with cut-out notches, such as those used by the *Mundurucú.*

The *Macushí* of the Guianas use notched sticks for counting time. Other groups in the Guianas bore a number of holes in a stick and fill each with a peg so that time can be counted by removing a peg for each day. Also, days are counted by removing one stick a day from a bundle. This device is used to anticipate the date of a future fiesta or celebration. The hosts assemble a bundle of sticks, corresponding to the number of days which will elapse until the time of the fiesta. A similar bundle is sent to the invited guests. By removing a stick each day, everyone arrives at the proper time.

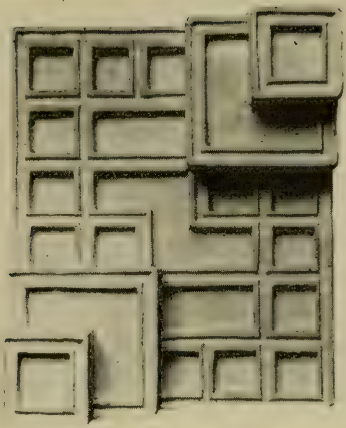
The *Inca* used painted sticks as a memory-supplement, in which the association with a particular color band was important. The *Inca* knotted-string quipu is described in detail below. Although essentially a recording device, it was also used by the specialists as a memory aid in reciting genealogies, liturgical material, native verse, and the like. The knots might represent numbers, years, or a certain quantity. The *Inca* also used pebbles for memorizing the words of prayers. Today the *Aymara* use pebbles as a mnemonic aid in counting the warp threads in weaving. Generally, each pebble represents 10 threads.

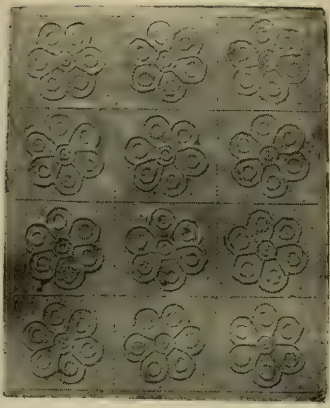
## CALCULATING DEVICES

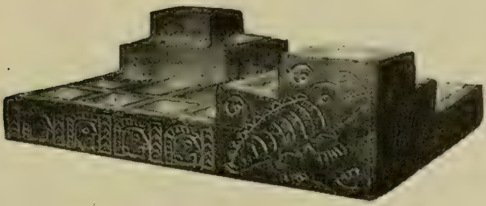
Many groups used the digits of the fingers and the toes as a simple counting aid, a fact that is frequently reflected in the names of the numbers. The modern *Aymara* not only count the digits, but also the spaces between them. Sticks, pebbles, seeds, and kernels of corn are also widely used as simple counting aids. For most of the South American tribes these aids were sufficient. However, the elaborate organization of the *Inca* Empire depended on fairly accurate accounts of population, services, and various kinds of materials. Consequently, a more elaborate calculating device was required. The quipu will be described in detail in the following section, but the authorities now agree that it was basically used for recording, not calculating. In fact, any process which involved tying and untying of many knots would be exceedingly clumsy for calculating.

The Indians in Perú now use an abacus, called a "chimpu." This is a counter of pierced beads or shells strung on strings. The number of strands threaded through each bead indicates the order of units, tens, or hundreds, and the beads are slid along the strings as counters. However, this bead counter is known to be of modern derivation, and no similar device has ever been found in ancient Perú, nor was it mentioned by the chroniclers for the *Inca*. The chroniclers do mention some counting techniques and the use of an abacus, but their descriptions are somewhat vague. Apparently, some counting was done with piles of pebbles or kernels. The abacus is described as a tray with rows of compartments in which counters, such as pebbles or kernels of corn could be moved. The resulting numbers were then recorded on the quipus.

In archeological sites, cut-out boards have been found made of stone, clay, or wood (pl. 53, *top*). Various authors have identified these as abacuses, models of forts, and gaming boards. The simplest form is a board with 5 small hollows scooped out. This presumably was used as a gaming board for "chuncara." The dice were thrown, and, depending on the count, counters were moved from one of the small hollows to another. The first hollow, or "house" had a value of 10, and so on up to the fifth, with a value of 50. Other boards are more elaborate, and one common type has a total of 21 hollows or boxes. The board itself is roughly square, and has 7 small boxes of about the same size lining 2 of the diametrically opposed corners. The inner flat space between these corners contains 2 somewhat larger







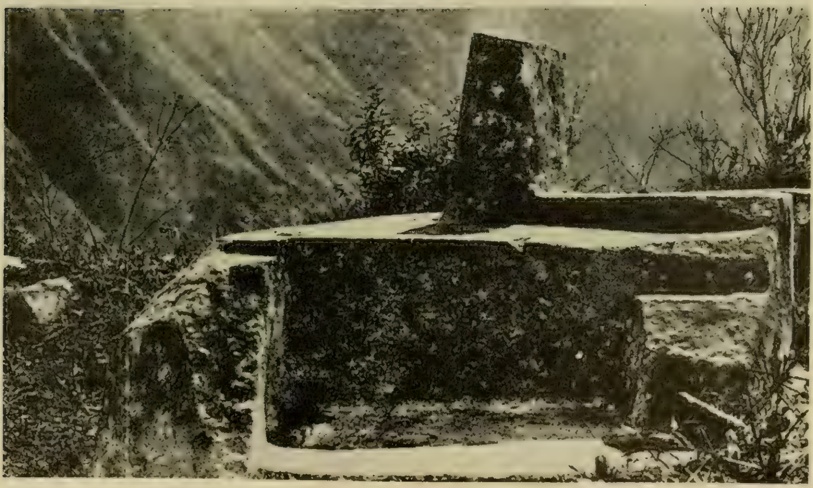


PLATE 53.—**Game boards and intihuatana.** *Top:* So-called "game boards" from the prehistoric periods of the North Coast of Perú. *Bottom:* The *Inca* intihuatana, or "place to which the sun was tied," at Machu Picchu. (After Verneau and Rivet, 1912–22, vol. 1, pl. 15; and Bingham, 1930, fig. 32.)

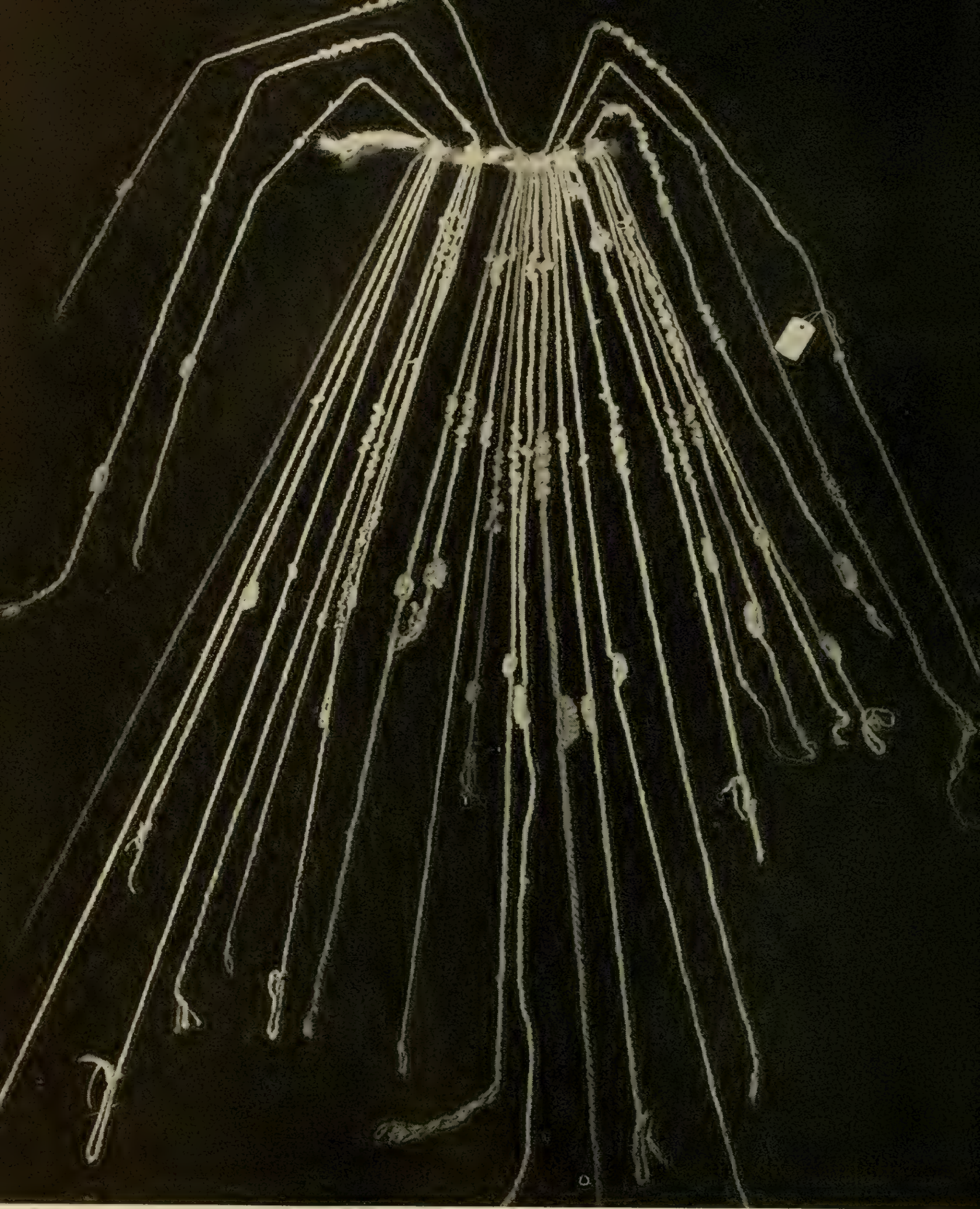


PLATE 54.—**Quipu, or Peruvian knot-record.** (Courtesy American Museum of Natural History.)

boxes and 1 extensive central one. The remaining 2 corners have 2 boxes each, raised 2 tiers above the lower surface of the board. The general appearance of the boxlike compartments and the raised corners has led to the suggestion that the boards might be models of forts, although this is somewhat fantastic. Some authors have claimed that the boards were calculating devices, and Wiener (1880) even assigned unit values. Thus, the small boxes represented units; the next larger, doubled the values; the center trebled the value; the first raised tier of boxes sextupled the value; and the highest boxes doubled the value. It is not by any means clear how any of the boards could have been used in calculating, and the identification as gaming boards is probably correct. However, it is entirely logical that a true abacus might have developed from a game of this nature, or vice versa.

The facsimile reproduction of the illustrated manuscript of Guamán Poma de Ayala (1936) has made new evidence available about the *Inca* calculating methods. Guamán Poma states that the *Inca* used boards on which numbers from 1 to 100,000 could be manipulated, by means of counters of stones, kernels, seeds, and the like. Most important of all is an illustration which shows a figure of a savant holding a quipu, and in the lower left-hand corner a drawing of one of the counting boards. This particular text figure has been analyzed by both Wassén and Locke, and the present summary is based largely on Wassén's article. The drawing shows a board divided into 20 compartments, i. e., 5 horizontal rows of 4 compartments each. For convenience of reference, Wassén has lettered the vertical rows from left to right, as A, B, C, and D, and the horizontal rows from top to bottom as a, b, c, d, e. In the drawing, each of the boxes or compartments contains one or more holes, or depressions. Each box in column A contains 5 holes, each in B contains 3, each in C contains 2, and each in D but 1. In the manuscript there is no indication of the values assigned to the columns and boxes. However, Wassén has assigned values which he believes were applied, and which would be serviceable in calculation. For the horizontal rows, (small e, d, c, b, a), he assigns the values of unit, 10, 100, 1,000, and 10,000, in ascending order. Such values are consistent with the decimal system, and are confirmed in part by the chroniclers and in part by analysis of the quipu itself. For the vertical columns (A, B, C, D) he assigns values of 1, 5, 15, and 30 respectively, although he is less certain about these, and notes that others would be possible. However, he points out that 15 is a common convenience in an abacus based on the decimal system. Furthermore, each of the 4 vertical columns might well correspond to 1 pendant strand of a quiqu.

Wassén gives a simple illustration of how such an abacus might be used. In initial counting, pebbles could be placed in the 5 holes in Box Ae. When 5 has been passed, 1 pebble could be shifted to the first box on the right (Be) and the pebbles in the first box reduced accordingly. This process of transfer and reduction could continue throughout the abacus. Actually, calculations could be made on the basis of columns A and B alone, but it can be shown mathematically that 15-multiples facilitate decimal calculation. Furthermore, column D, with box value of 30, 300, 3,000, 30,000, and 300,000, would be useful for calculating days and months, and the recording of years has been suggested as one use for the quipu. It would be possible to multiply, subtract, and divide on an abacus of this kind, but whether such techniques were used by the *Inca* is unknown. The *Inca* may have had other forms of abacuses, but so far this is the only one that has been specifically and clearly identified. Obviously, it would not be necessary to have special boards for the calculations. The simple pattern of squares and holes could be quickly drawn on a clay floor and serve the purpose equally well.

## QUIPUS

The only elaborated recording devices in South America are the knotted strings, found principally in the Central Andean region, and generally identified by the *Quechua* term "quipu" (pl. 54). The quipu achieved its most extensive use and most elaborate and precise form among the *Inca*, and, consequently, the *Inca* quipu will be described first. The material for most of this account is based upon the monograph by Locke. This is basically an analysis of the quipus in museum collections, most of which have come from graves on the dry Coast of Perú. Although period identification is not always certain, most of the specimens belong to the *Inca* Period. However, there is some evidence that the quipu is quite old in the Central Andean region, since early Mochica pottery vessels have designs which suggest the quipu. Locke also examined descriptions of quipus by the chroniclers, and the rare drawings made by them. Likewise, more recent writers have described the quipu and its usage. Finally, some quipus are still used by the Highland Indians of Perú and Bolivia. Since Locke wrote his monograph, many more quipus have come into museum collections, but the descriptions of these has in no case significantly modified the basic conclusion reached by him.

The general characteristics of a quipu can be summed up briefly, in spite of considerable variation. A quipu has a principal cord, from a few centimeters to over a meter in length, to which from 1 to over 100 pendant cords, seldom over ½ m. in length, are attached. Both the main cord and the pendant cords are made of either cotton or wool. The pendant cord is usually made of a double length of cotton yarn, folded back in the center and twisted together. A loop is left at one end for attachment to the main cord. Several pendant cords may be grouped together, either by spacing or by a loop of yarn.

Knots are tied in the pendant strands at varying distances from the base cord. These are either single overhand ties, or a long knot formed by wrapping a series of loops before it is drawn tight. In all cases, a single knot or a single loop represents a unit value, ranging from 1 to 9. In general, the long knots are used for digits, single knots for higher units. All knots record numbers in a straight decimal system, and the value assigned depends upon the distance away from the main cord. Higher magnitudes are closest to the main cord; digits are farthest away. Most strands record only units, tens, and hundreds, but in some, positions for thousands and ten thousands are found. When several pendant cords are grouped together, an additional top cord may be added on which is recorded the sum total of all the cords in the group. Occasionally, subsidiary cords are attached to one of the pendant strands, and utilized for recording numbers not in the main count.

The pendant strands may be of different colored natural or dyed yarns, or two different colors may be twisted together to form a single strand. Undoubtedly, the color had significance, but it is not certain it was standardized. Some writers have interpreted the color significance as follows: White is said by Garcilaso (1723) to represent silver and by De Nadaillac (*in* Locke, 1923) to represent time, in the sense of days to come; black is said by both Bastian (1878–89) and De Nadaillac to represent time, in the sense of nights which have passed; yellow is said by Garcilaso to represent gold; red is for warriors or war; and two colors twisted together are for items of government. It is difficult to evaluate these interpretations.

Locke describes several quipus in detail, and specimen B–8713 in the American Museum of Natural History collection will serve as an example. This specimen comes from Chancay on the Coast of Perú, and consists of a base cord with six groups of four pendant strands each. Long knots are used for digits, single knots for higher numbers, and there is a summing strand for each of the six groups. The pendant knots record digits, ten, and hundreds only, but for the sum total knots for thousands are included. Some of the pendant strands have auxiliary cords which have nothing to do with the total count. The pendant colors are brown, white, and mixed, and Locke suggests that this quipu might be a record of four types of things over a 6-year period.

Locke concludes his studies of the quipu with five major points. (1) The quipu was used primarily for recording numbers. Practically every reference to the quipu by the chroniclers is in connection with statistics. The records undoubtedly included totals of population and livestock, the production quantities on lands pertaining to the church and the state, records of labor assignments, records of a storehouse contents, and the like. (2) Quipus were probably used as a *memoria tecnica* in memorizing historical items, poems, lists of kings, and the like. For example, some chroniclers claim that the life history of each *Inca* ruler was recorded on a quipu. This probably means that important events in the individual's life were represented by numbers referring to the years, months, and weeks of his age. (3) The quipu was not adapted to calculation. In spite of a number of claims that the quipu was a calculating device, it now seems clear that the abacus, described in the previous section, was utilized for this purpose and that the quipu was reserved for recording numbers. (4) A scheme of representative colors was probably in use, although difficult to interpret. (5) The quipu was not a conventionalized scheme of writing. This point would need no elaboration were it not for the fact that a number of spurious claims, most of them definitely fraudulent, have been made that some quipu knots were tied in such a way as to represent a system of letters. Locke examined all such claims and showed none of them to be tenable.

Nordenskiöld believes that many of the quipus record combinations of mystical, calendrical, and astronomical numbers. Some quipus, examined by him, present combinations of numbers which are inconsistent with any simple count of objects. Most quipus are found in graves, and Nordenskiöld feels that no Indian would be interred with anything which pertained to or would give his spirit power over the living. Wassén cites a passage from Guamán Poma which says that quipus recorded fiestas, domingos (weeks?), months, and years. If, as has been suggested, the *Inca* month of 30 days was divided into 3 weeks of 10 days each, recording on the quipu would be possible.

Some of the quipus examined by Locke might have been census records. In these specimens the pendant strands are grouped in sets of four to six. Locke examined the census of 1606 and found that the records for five pueblos were arranged in four to six categories, namely, tributarios, casados, reservados, viejas, muchachos, and muchachas (tribute payers, married, youths, old people, boys, and girls).

In *Inca* times, the records were kept by specialists of high rank in the government, called quipu-camayoc. These individuals traveled throughout the Empire and kept account of innumerable items. In spite of some conventionalization, the quipu records required certain oral interpretation, a fact which makes it difficult for modern scholars to deciper the recorded numbers. The quipu was also used by the *Aymara* for keeping records in numerical form. The pendants were of different colors and represented the categories of objects counted and each knot served as a unit. A quipu is still used by some of the herding Indians of Perú and Bolivia in order to keep track of the number of animals in a herd, the new ones born each year, and those which died. A comparison of the modern quipu with that used by the *Inca* shows that the system is about the same, only generally cruder and simpler. Locke makes four points of comparison. (1) The decimal system and the relative placing of knots in the same. (2) The subsidiary strand for odd counts is used in both. (3) Some modern quipus have a main cord, others lack it. Still others use single-ply pendant strands for recording units and double ply for 10's. This distinction in strands is not found on the ancient quipus. (4) All knots on the modern quipu are single, and the long knot is no longer used.

The quipu was used by other tribes in the Andean region. The *Araucanians* used a quipu for keeping accounts of livestock, for recording events, for keeping track of the number of days of work done, and for indicating the number of days which would elapse before the warriors should assemble. The *Pehuenche* are said to have sent quipus to their enemies in which the knots indicated the amount of blood money demanded for some offense. If the strands were red, it indicated that vengeance would follow shortly if the price was not paid. Quipus were also used by some of the Colombian tribes. The *Popayán* and the *Coconuco* used cords with colored knots to record events or time, and the *Chocó* kept a count of days and months and a record of amounts of certain objects on quipus. Outside of the Andean region, knotted strings are used only in the Guianas, for keeping track of future dates. A knot is tied for each day intervening before the date set. A knot is untied each day, the last one representing the date of the celebration.

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# MEDICAL PRACTICES

### By Erwin H. Ackerknecht

With the exception of the medicine of the pre-Columbian Andean civilizations, to which a special section will be devoted, we shall in the following pages treat the medical practices of the South American Indians as a whole. Such a summary procedure is not without the danger of oversimplification, but this danger is less for South America than for any other continent or subcontinent. Certain factors, particularly incessant and intricate migrations, have produced a remarkable degree of uniformity in South American Indian medical practices and these far outweigh differences between the tribes.

## THE NON-ANDEAN TRIBES

The medical practices of the non-Andean South American Indians show the same fundamental characteristics as those of primitive tribes all over the world. In describing, classifying, and analyzing the practices used in fighting disease together with the theories underlying such practices, we are bound to use concepts and categories of our own culture, such as "medicine," "disease cause," "diagnostics," "therapeutics," "drugs," "preventatives," etc. It should be emphasized from the very beginning, however, that though unavoidable this is highly artificial. Like other primitives, the South American Indians either totally ignore these categories or attribute to them a meaning very different from the one they have acquired historically in our civilization. Especially, the South American Indians do not strictly separate the fields of religion and medicine as we generally do, but, on the contrary generally integrate medical practices into a larger magico-religious complex which determines the form and content of those aspects of their medical practices, which, from their point of view, are the essential ones.

### CONCEPTS OF CAUSES OF DISEASE

**Natural causes.**—The statement of numerous ethnographers that the South American Indians regard disease exclusively as the product of supernatural forces (spirits, sorcery, etc.) seems to be corroborated by the extreme scantiness of instances in which diseases were regarded as the result of natural agencies. So far, such instances have been recorded only from the *Yagua*, *Camaracoto*, and *Jívaro*, and it even seems doubtful whether the *Jívaro*, in distinguishing the diseases imported by the White man from those caused by their own traditional witchcraft, actually differentiate between natural and supernatural causes of disease or whether they only differentiate between two sets of magic. Even admitting that more numerous and more careful observations would probably increase our records of cases in which natural factors were thought to be a cause of disease and death, it seems beyond doubt that what for us is the most current explanation of disease is most exceptional among the South American Indians.

**Disease-object intrusion.**—Prevalent among the different concepts of the cause of disease in South America is the idea that a maleficent foreign substance, projected either by a malevolent spirit or by a sorcerer, has entered the body. This concept seems also the most widespread and the oldest theory of disease among primitives in general. It may well have been a generalization of experience with thorns, animal parasites, darts, and other missiles. The task of the medicine man is to extract the foreign body, which has the form of a small bone, piece of wood, pebble, small animal, etc. The disease object often seems to have a more symbolical character, being only the materialization of a disease-producing principle or force. This is brought out by the fact that sometimes the extracted substance is invisible, that diseases are caused by "invisible arrows" (*Carib*, *Arawak*, Gran Chaco).

Object intrusion as the cause of disease is reported from Venezuela and Guiana, the *Taulipáng* and other *Carib*, from the *Cherigoto*, *Choco*, *Colima*, *Jívaro*, *Muzo*, *Paragoto*, *Pitagoto*, *Cayapa*, *Canelo*, *Napo*, *Tonocote*, *Witoto*, *Bacaïri*, *Ipurina*, *Caingang*, *Chiquito*, *Manasí*, *Mataco*, *Guaicurú*, *Chorotí*, *Lengua*, *Abipón*, from Perú, the *Araucanians*, *Ona*, and *Yahgan*.

**Spirit intrusion.**—Hardly less widespread in South America is the concept that a spirit has caused the disease by directly entering the body of the patient. It may enter one of the body openings (mouth, nose, genitalia, ears, etc.), especially when the opening is unprotected.

The foreign body-intrusion and the spirit-intrusion theories are by no means mutually exclusive and may coexist in the same tribe. Often it is very difficult to judge from the meager records whether the spirit remains outside but projects disease substances into the body or whether it actually enters the victim's body. It would be unjustified to interpret every case of object intrusion as spirit intrusion. The different methods of driving out the spirit will be described later. South American burial rites have been interpreted as being protection against the disease spirit rather than against the ghost, that is, the deceased's soul (Karsten, 1926). Spirit intrusion in South America has been linked with nonagricultural tribes (Radin, 1942). The hypothesis of Karsten as well as of Radin is open to discussion.

One of the most common clinical forms of spirit intrusion in other parts of the world is "possession"; that is, different forms of mental disease are attributed to a spirit which has entered the body of the patient and speaks out of his mouth. It is rather surprising that in South America, where the spirit-intrusion theory is so widespread and where ritual (normal) possession of the medicine man after intoxication is almost universal, there are practically no records of true pathological possession. This phenomenon may be tentatively explained by the rarity of mental disease among the Indians of South America.

Spirit intrusion as a disease cause is reported from Guiana, the Barama *Carib*, *Taulipáng* and other *Carib*, from the Magdalena River Indians, the *Choco*, *Yahuna*, *Canelo*, *Cayapa*, *Colima*, *Ica*, *Jívaro*, *Apinayé*, *Coroado*, *Bororo*, *Carajá*, *Paressí*, *Purí*, *Manasí*, *Mataco*, *Chiquito*, *Toba*, *Ashluslay*, *Chamacoco*, *Chorotí*, *Lengua*, Peruvian Indians, *Araucanians*, *Patagonians*, and *Ona*.

**Soul-loss.**—Disease may also be caused by soul-loss. The soul or one of the souls is abducted by a malevolent spirit, a ghost, a sorcerer, or a spirit controlled by a sorcerer. So excellent an observer as Nordenskiöld thought this primitive concept to be very exceptional in South America as compared to North America, but the following list shows that the soul-loss theory, though less common than object- or spirit-intrusion theory, is fairly widespread in South America. It even determines some of the most characteristic activities of the South American medicine man. Nordenskiöld's error only shows how scanty our knowledge of the South American Indian is. Clements (1932) regards soul-loss as a Siberian development which diffused only recently into the New World. Soul-loss as a cause of disease has been recorded from the *Taulipáng* and other *Carib*, from the *Colima*, *Guinau*, *Tucano*, *Witoto*, *Cocama*, *Apinayé*, *Caingang*, *Bacaïri*, *Paressí*, *Yacuana*, *Itonama*, *Lengua*, *Mosetene*, *Mataco*, Peruvian Indians, *Araucanians*, and *Yahgan*.

**Taboo transgression.**—The idea that disease may be a consequence of having violated tribal laws and customs is relatively rare among South American Indians. It has been recorded from the *Bororo*, *Tupí*, *Abipón*, *Chiquito*, and *Manasí*, and from *Guiana*, but seems to be more common in Colombia and Ecuador, being attributed the *Piaroa*, *Arhuaco*, *Colima*, *Cayapa*, *Ica*, and *Jívaro*. Nowhere does the concept seem to have been so important or elaborate as among the *Inca*.

**Sorcery.**—Sorcery is held responsible for disease all over South

America. In order to produce disease or to kill, the sorcerer may "shoot" visible or invisible disease-producing objects into the body of his victim, he may send one of his spiritual helpers into the patient, or he may, with the help of spirits, abduct the soul of the man, causing him to fall sick. The spirits, which act in disease either on their own account or under compulsion of the sorcerer, are either the souls of the deceased (ghosts), monsters, or, in the majority of cases, nature spirits (animal spirits, plant spirits, spirits of the water and sky, etc.).

In addition to these methods, the sorcerer also uses the traditional methods of sympathetic and contagious magic.

The sorcerer is generally believed to be the medicine man of a neighboring tribe. Sorcery seems to be a kind of rationalization of intertribal rivalries; at the same time, the belief in sorcery keeps such rivalries alive, as almost every case of disease provokes new feuds.

The belief in sorcery is recorded from Guiana, the *Taulipáng* and other *Carib*, from the *Cayapa*, *Jívaro*, *Cashibo*, *Yagua*, *Yuracare*, *Manasí*, *Chiquito*, *Lengua*, *Itonama*, *Mosetene*, *Nambicuara*, *Chorotí*, *Abipón*, *Muinane*, *Campa*, *Conibo*, *Ipurina*, *Bororo*, *Bacaïri*, *Paressí*, *Apapocuva-Guaraní*, Indians of Perú, *Araucanians*, and *Ona*.

A particularly obnoxious variation of the belief in sorcery is the Kanaima concept of the Guiana Indians. "Kanaima" is a monster which kills, obviously under the influence of a sorcerer; "Kanaima" is also an avenger who punishes a guilty sorcerer. The activity of the Kanaima avenger is strongly bound by rituals. Radin calls Kanaima "socialized running amuck." From the few records on the Kanaima, it is hard to discern what are actual facts and what are hallucinations.

**Other disease concepts.**—The concepts previously analyzed form the bulk of the disease theories encountered among South American Indians. Nevertheless, isolated reports of other and very interesting disease causes exist, and it is likely that closer observations, unprejudiced by the categories into which we have already divided primitive concepts of the disease, would probably bring out wider distribution of these isolated concepts and would disclose new ones. The *Caingang*, for instance, believe that the soul may not only be abducted but also devoured by spirits and monsters. In the latter case, no remedy exists. The *Lengua* and *Taulipáng* attribute epidemics to the influence of winds, a concept which survived in western civilization up to the 19th century and which was greatly developed in the medical lore of the *Inca* (below). The *Yuracare* attribute pain and nausea to wind spirits.

The foregoing analysis shows that most South American tribes hold several notions of disease simultaneously. Often one of these predominates, but this need not be the case. In the few cases where only one disease theory is reported (for example, sorcery among the *Carajá*, *Paressí*, *Bacaïri*), one cannot help thinking that perhaps the predominant notion was taken to be the only one, or that the period of observation was too brief to ascertain all disease concepts, or that the data were not adequately analyzed. It is doubtful whether the American Indian is consistent with his disease concepts, always attributing the same symptoms—disease names generally are only taken from symptoms—to the same disease cause (spirit- or object-intrusion or soul-loss, etc.).

### DIAGNOSTIC METHODS

Diagnostic methods of primitives are preponderantly methods of divination. Before starting treatment, the South American medicine man, or shaman, has to enter into contact with supernatural forces in order to learn about the cause and character of the disease. Many methods of divination are used by medicine men throughout the world, but the South American medicine man has specialized in one: artificial trance. Trance is also widely used elsewhere in the world, but nowhere are drugs so consistently used to induce it.

Two things may happen during the trance: either the shaman's soul leaves the body to visit heaven or other abodes of spirits and ghosts which he is to consult; or a ghost or spirit may enter the shaman's body and speak through his mouth, which, with a changed voice, imparts the desired information (artificial normal possession). The spirits' benevolent help consists of giving not only diagnostic tips but generally also advice concerning the treatment. Often, the shaman has a particular spirit as helper (*Witoto*, *Taulipáng*, *Yahgan*). In the case of soul-loss, the trance may even be a primarily therapeutic measure; the shaman's soul leaves the body in order to pursue and bring back the lost soul. In this case, the procedure is strangely reminiscent of that of Siberia, except for the use of intoxicants. The voyage of the shaman to heaven was described in the 16th century by Peter Martyr for the *Island Arawak*. It has been reported also for the Guiana *Carib*, the *Galibi*, the *Manasí*, *Paressí*, *Cumaná*, etc.

Tobacco is the most important medical plant of the South American Indian, being used in all kinds in healing rites, and tobacco juice is the agent used most frequently to produce the shaman's trance (e. g., *Galibi*, *Taulipáng*, *Bororo*, Barama *Carib*, *Jívaro*, etc.). The *Huanyam* mix tobacco with other herbs. The *Bacaïri* employ tobacco together with "cipo de cobra" and "timbo" (*Paullinia pinnata*). The *Mojo* drink a decoction of "marari," a plant similiar to our vervena. The corresponding plant of the *Canelo* is called ayahuasca. The *Witoto* use another liana. *Jívaro* narcotics include tobacco, *Banisteriopsis caapi*, and *Datura arborea*. The trance of the *Araucanian* shaman seems to be induced by mere dancing. *Itonama* shamans now take opium. In Colombia, an intoxicating drug, *Datura*, is used to produce twitchings which are interpreted as diagnostic omens. (For drugs, see also pp. 628–629.)

A trance, generally one induced by a decoction of a plant, especially tobacco, seems to be the shaman's main diagnostic procedure in the overwhelming majority of South American cases. A few other methods have been reported, but they are only from the more southern parts of the continent.

The *Yuracare* shaman diagnoses by examining his own saliva in the palm of his hands; the *Caduveo* shaman, by contemplating the stars and a kind of mirror. The *Yahgan* diviner talks with his spirits from the outside of a hut, very much like certain North American conjurers.

### THERAPEUTIC PROCEDURES

**The standard procedure.**—From the Caribbean Islands to Tierra del Fuego the treatment or healing rite is remarkably uniform. This "classic" procedure consists essentially of: (1) Fumigation of the patient with tobacco smoke, generally emanating from the shaman's gigantic cigar, and singing; (2) the trance discussed above; (3) massage and sucking, accompanied often by inarticulate noises and spitting and generally ending with the extraction of an object (splinter, pebble, insect or other small animal, etc.); and (4) external or internal application of herb infusions or other drugs. We have more or less detailed descriptions of this rite from the *Paressí*, *Bacaïri*, *Caraja*, *Mojo*, *Taulipáng*, *Yuracare*, *Arecuna*, *Macushí*, etc.

The different elements of the rite may be rationalized in different ways. It may be explained that during the trance the shaman's soul makes a voyage to heaven or that the medicine man is visited by spirits. The smoking may be designed to drive out the disease spirit (*Toba*) or to "soften the skin" so that objects may be extracted (*Yagua*). The technique may vary in the different acts: massage may be reduced to blowing and touching intended to transmit the shaman's spiritual force to the patient; blowing may also be intended to remove the disease; and sucking may be replaced by biting, or it may be absent (*Pai*). The principle extracted may be material or immaterial. Singing may be accompanied by noise made with a rattle or a basket of leaves. The rite may or may not be performed in a special hut. But in spite of these minor local variations, the fundamental pattern remains always the same, and the whole ceremony represents always a battle between the shaman and the forces of disease.

From a psychological point of view, it is interesting that the treatment is preferably performed during the night. It may last sometimes 24 hours. Rich persons seem to enjoy, at least in some tribes, a more elaborate ceremony than poor ones.

"Therapeutic" dances, either by the shaman and the community or by the patient, seem to be very rare in South America and have so far been only reported from the *Toba*, *Chavante*, *Jívaro*, and *Mataco*.

Sacrifices during the healing ceremony are known outside of Perú only among the *Araucanians*.

Flogging with nettles as a treatment (flogging with nettles as a prophylactic will be discussed later) combined with stepping on the body of the patient in order to drive out the disease spirit is recorded from the *Atsahuaca*. Against epilepsy, the *Taulipáng* use a special and more cruel treatment with pepper and ants.

In view of the widespread medical use of sucking, it is not surprising that sucking is a major item in the treatment of the frequent cases of snake bite (*Abipón*, *Lengua*, *Macushí*).

Singing by the shaman during a healing rite deserves special discussion. Singing seems to be almost universal; only the *Yagua* and *Yamamadí* are expressly stated to require that the medicine man remain silent.

In spite of the poor documentation concerning the content of the songs, there is little doubt that they consist of magic formulae, spells, and counterspells, which are so frequently recorded in great detail from other parts of the world. One author (Koppers, 1924) mentions that the *Yahgan* healers sing without text (a question that is very difficult for the outsider to decide as every ethnographer knows). Most authors give no details at all, but a few mention the existence of such magic formulae (for the *Jívaro*, *Aparaí*, *Poracraman*, Rio Purí Indians, *Carib*). Only Koch-Grünberg (1923 a) has actually recorded such magic formulae (from the *Taulipáng*). He reproduces spells against ulcers, caused by the eating of deer meat; against pustulae in the face; nematodes; sore throat and hoarseness; the sting of the ray; snake bite; diarrhea of infants; difficult childbirth; and epilepsy. All these formulae have in common the invocation of mythical helpers (nature spirits, etc.); this invocation can also be used for sorcery. It is likely that the content of "songs" in other tribes is similar to that in Koch-Grünberg's material.

**Drugs.**—Knowledge of the South American Indian's pharmacopoeia brought some of the most momentous changes in our own pharmacopoeia. The discoverers of South America were fully aware of this, as shown by the writings of Monardes (1925), F. Hernández (1628), Piso (1648), and almost all the early chroniclers (Espinosa, Acosta, Cobo, etc.). Piso, for example, learned from the Brazilian Indians the use of ipecac in (amoebic) dysentery.

It is true that some of the once most-respected discoveries of the South American Indian, such as guaiac, jalap, sarsaparilla, and sassafras, have become obsolete. But of his two outstanding drugs, coca and tobacco, the one has opened a new era in surgery and the other has faded from medicine only to rule the life of the healthy all over the world. Ipecac, curare (which has made possible some of the basic discoveries in physiology), cascara sagrada, *Chenopodium*, *Lobelia*, and Peruvian and Tolu balsam still hold an eminently honorable place in our own pharmacopoeia in spite of the dominant fashion of synthetic drugs. (For cinchona, see the chapter on Peruvian medicine). The abundance of new drugs is commensurate with the other treasures which our culture has borrowed with important consequences from South American Indian ethnobotany—the wealth of new nutritive plants, poisons, and narcotics.

Unfortunately, the quantity and quality of our information concerning the South American Indian drug and herb lore has continuously decreased during the last 400 years. (The responsibility lies with our civilization itself, which unjustly underestimates the value of such studies rather than with the ethnographers.) But even our scanty material suggests that the overwhelming majority of the South American tribes uses a great number of drugs, especially those obtained from plants. The *Ona* and *Yagua* are accredited with no drugs, the latter, "because they attribute all major diseases to evil magic" (Fejos, 1943). The herb lore of the *Yahgan* and some *Carib* seems to be rather poor. Data on the *Botocudo* are contradictory; Prince Maximillian von Wied found them rich in drugs; Ehrenreich, poor. Henry (1941) believes the *Caingang* made an indiscriminate use of drugs. The *Omagua*, *Cocama*, and *Itonama* are supposed to have a very rich pharmacopoeia. We haxe extensive lists of healing herbs from the *Araucanians* (Aichel, 1913, and Gusinde, 1931), *Guaraní* of eastern Paraguay (Müller, 1928), *Araona* (Armentia, 1903), *Paressí* (Rondón, 1913), Juruá-Purús Basin tribes (Tastevin, 1910), Barama *Carib* (Gillin, 1936), etc. The *Carajá* even cultivate healing herbs in gardens.

Drugs are used by both professional healers and laymen. In both cases the effect of the drug (as of the poison) usually seems to be explained by the same underlying principle: the drug is active because of its spiritual force, because of its magic power, or because of the spirits which inhabit or govern it. For example, among the *Yecuana*, a certain drug called woi, which is actually poisonous, is thought to be effective not only in curing but when used in a magical ceremony against a distant enemy sorcerer. Even if a drug is effective physiologically, "it is not inconsistent in *Cariban* thought with the theory that disease is due to spiritual causes. It is believed that the application of medicine to a wound, for instance, is so unpleasant to the spirit which has caused the wound that it ceases its interference." (Gillin, 1936.)

Drugs obtained from the animal kingdom seem relatively rare. In the Juruá-Purús Basin toads are used; with the *Guaman*, snakes. Though the underlying idea in both is certainly magic, it should be emphasized that *Choco* arrow poison, one of the most powerful of South America, is made from the skin of a frog and that the skin of batrachians in general contains pharmacologically or toxicologically active principles. Among other animal drugs are jaguar fat, which enjoys a high reputation as an antirheumatic and antiparasitic, and fossil bones, which the *Mosetene* regard as "spirit bones." The *Mosetene* belief is reminiscent of Chinese folklore; similarly, bezoars (concretions found in the stomach of deer), which the *Araucanians* and *Ona* esteemed even before the European Conquest, were also a famous oriental and medieval panacea.

A great many drugs are emetics. The *Yecuana* used a fish poison with good success against scabies, which is also successfully treated by the *Taulipáng*. Frézier, who gave an extensive list of *Araucanian* drugs as early as 1717, mentions successful treatment of dermatitis venenata (poison ivy-like skin disease). Nordenskiöld states that the *Yuracare*, *Chacobo*, *Chimane*, and *Atsahuaca* cultivate tobacco exclusively as a medicant against the boro, the larva of an oestrid fly (dermatomya), which is a parasite of the skin.

**Bloodletting.**—Bleeding as a prophylactic-therapeutic measure seems to be extremely widespread in South America. It is reported, for example, from the *Yahgan*, *Poya*, *Araucanians*, from Perú, the *Botocudo*, *Yuracare*, *Macushí*, *Coroado*, from Guiana, the *Carajá*, *Paressí*, Xingú River *Yahuna*, *Ashluslay*, *Chorotí*, *Pataj*, *Tonocote*, *Guaicurú*, *Purí*, *Sirionó*, *Cumaná*, *Guató*, and the Rio Doce tribes.

Insofar as the technical procedure is concerned, it seems that in most cases we deal rather with a kind of scarification than with true venesection. The use of a little bow and arrow in this operation, first described by Wafer in Panamá, and occurring also in New Guinea and among the African *Masai*, is reported for the *Cayapó* and *Chavante*.

In South America, bleeding as a therapeutic procedure has become particularly closely connected with the spirit-intrusion theory of disease. Bleeding seems to be the most popular means of getting rid of the intruder.

**Enemas.**—Enemas seem to have been widely applied for medical purposes in the northern half of the South American continent (fig. 188; pl. 55, *a*, *b*). Their use is reported from the *Arawak*, *Chocó*, *Jívaro*, *Canelo*, *Maina*, *Omagua*, *Cacharary*, Perú, the *Mura*, *Maué*, *Caripuna*, *Chiriguano*, and *Araucanians*.

The Indians of the Amazon region have contributed two important inventions in the field of clysters: the rubber-bulbed syringe, brought to Europe by the Portuguese, and the use of narcotic clyster, lately adopted in modern anesthetics.

Nevertheless, the narcotic clysters seldom had strictly medical applications among the Indians. The Indian clysters belong only partly to the medical field; they had also become, as among the Europeans of the 17th and 18th centuries, a kind of social custom or amusement.

**Baths.**—Bathing as a therapeutic procedure is occasionally mentioned; for example, the steam bath of the *Araucanians* and bathing in medical lotions among the Indians of the Juruá-Purús Basin, the *Nambicuara*, and the *Tupari*. The custom of taking cold baths is reported to have had disastrous consequences in measles epidemics (e. g., *Caraja*).

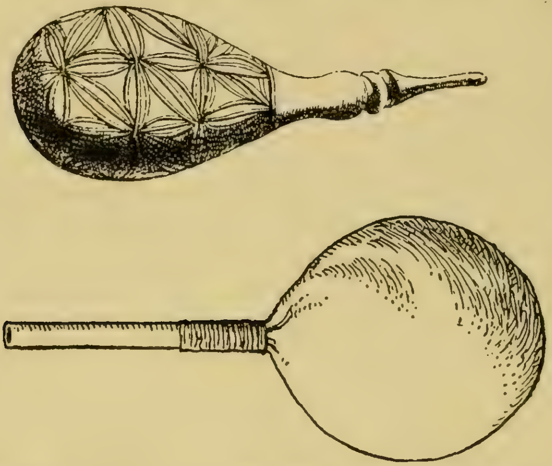

FIGURE 188.—Native enema syringes of South America. *Top:* Guiana and Amazon region. *Botton:* From a grave at Ollachea, Perú. The tube is of reed, the bulb of leather. (After Nordenskiöld, 1930 b, figs. 4, 21.)

**Diet.**—The prescriptions of the South American shaman also often contain dietetic regulations based, of course, on magico-religious concepts. The nonrational character of these dietetic rules becomes obvious when they are imposed not only on the patient but also on his family and on the medicine man, as among the *Taulipáng*, *Yecuana*, *Wayoro*, *Colorado*, and *Canelo*. The mental mechanism in this case is the same as in the famous couvade, another magic "prophylatic" rite which is also particularly well developed among the South American Indians (this volume, p. 369). Not the individual patient and his body but the family is regarded as the object of treatment, and offenses against the food taboos committed by relatives, no less than his own "dietetic" errors, will influence the patient's health.

**Transference of disease.**—While most of the above-mentioned

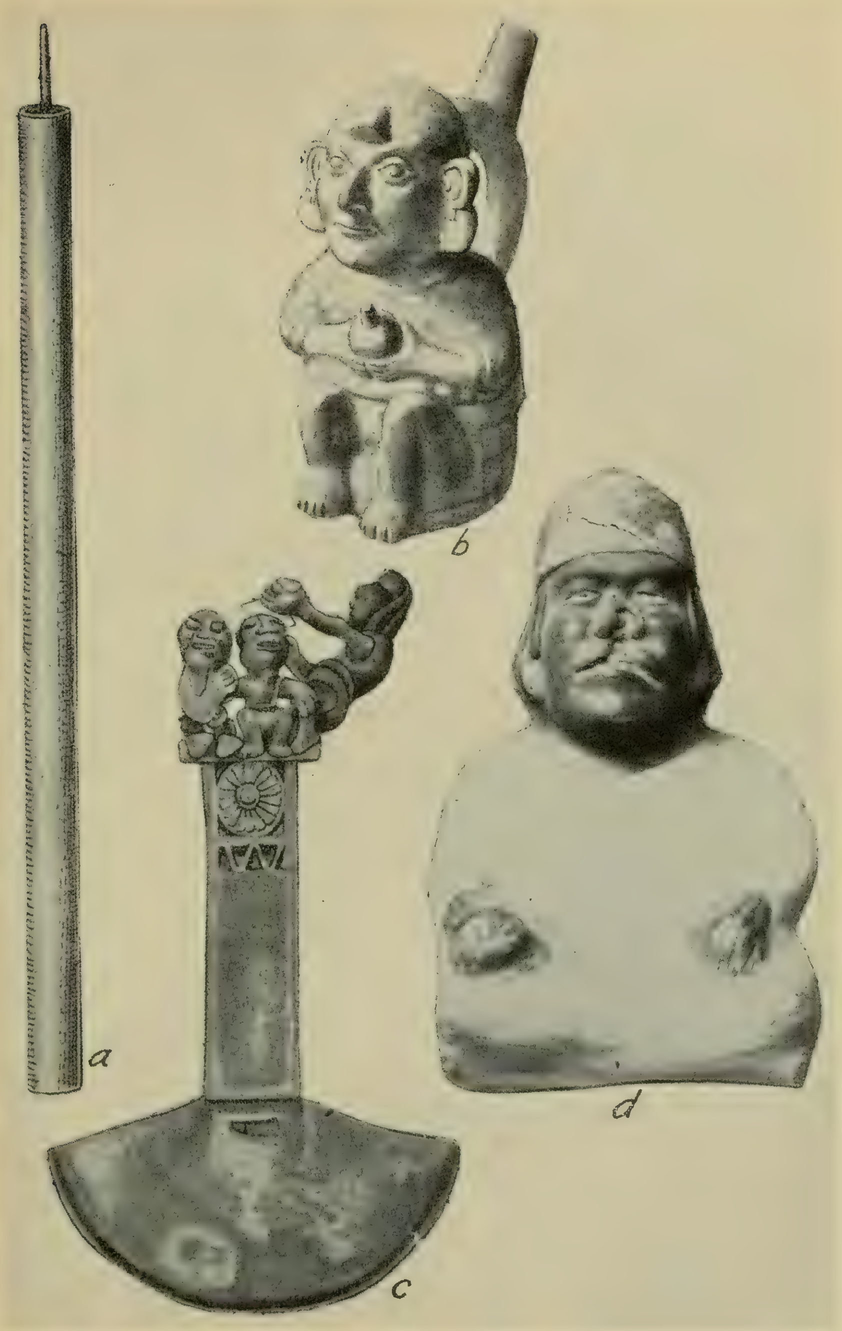

PLATE 55.—**Prehistoric and modern native medicine.** *a*, Enema tube, *Chocó* Indians (⅓ actual size); *b*, pottery vessel depicting man holding a syringe, Mochica culture of North Perú; *c*, trepanation scene on a bronze tumi (knife), South Perú, probably *Inca; d*, pottery representation of mutilation (uta?), Early Mochica culture, North Perú. (*a*, *b*, After Nordenskiöld, 1930 b, figs. 20, 2; *c*, after Pardal, 1937, fig. 31; *d*, after Schmidt, 1929, p. 144.)

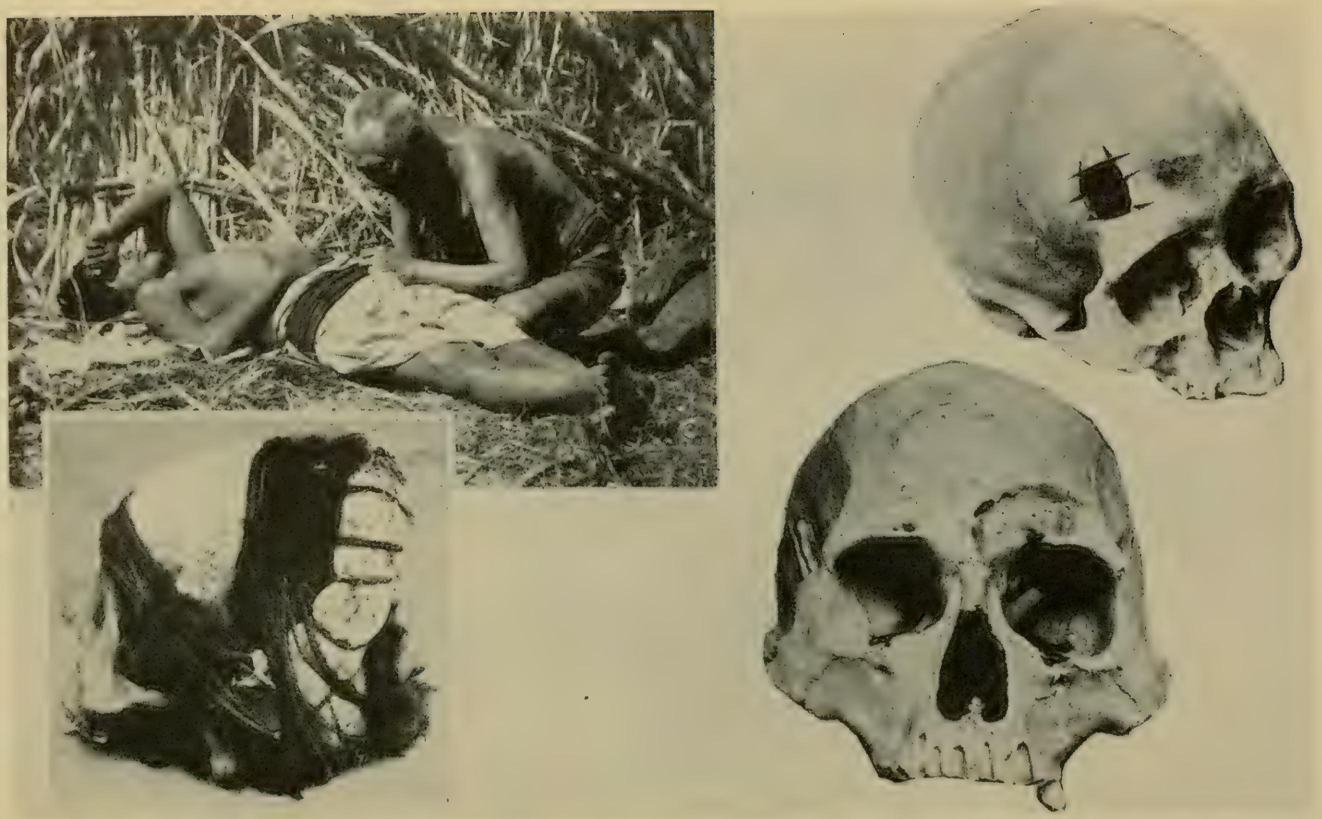

Plate 56.—**Prehistoric and modern native medicine.** *Top, left: Chocó* medicine man curing a patient. *Bottom, left:* Andean skull with wound dressing still in place. *Top, right:* Square trephined skull. *Bottom, right:* Andean skull showing scars from an operation on left frontal sinus. (*Top left,* After Pardal, 1937, pl. 2; *top, right,* and *bottom,* after Freeman, 1924, showing skulls from Museum of Anthropology, San Diego, California.

measures are dictated by supernatural concepts, many of them (massages, drugs, baths, bloodletting, diet, enemas) are, nevertheless, objectively effective. The transfer of disease from the patient to some other individual, animal, or object is purely magical and has only a psychotherapeutic effect. Transfer of disease, however, seems to be rare in South America. The only report of it is among the *Yuracare* (transfer to ants). The general absence in non-Andean South America of domesticated animals, to which disease is usually transferred in the Old World, may explain the absence of this belief. But transfer of disease to plants and objects is also rare. (*Ica*, Magdalena Rivers Indians, *Yuruna*). Another magic measure, changing the name of the sick person, has been encountered only once (Guiana *Arawak*).

**Confession.**—Confession of the sick can be regarded as a therapeutic measure only where taboo transgression is considered to be a disease cause, and even in the latter case, confession is not automatically employed. The use of confession in the treatment of disease seems restricted to the *Cayapa*, *Ica*, *Colima*, *Chiquito*, *Arauhuaca*, and *Abipón*.

**Surgery.**—As among most primitives, "surgery" among the South American Indians is limited to the opening of abscesses, wound treatment, and the more or less proficient treatment of fractures. An original method of treatment is the Jívaro chicle cast used in the case of fractures. The cutting of a limb in the case of snake bite (Orinoco Indians) is an isolated phenomenon. The alleged amputations of the ancient *Araucanians* might reflect Peruvian influence, if they were practiced at all. Reports of liver operations among the ancient *Araucanians* are almost certainly misinterpretations of the famous shamanistic trick of "changing the internal organs" (practiced also among the *Ipurina*) or of the postmortem opening of the abdomen, a very interesting *Araucanian* custom, unique in South America.

**Obstetrics.**—There are very few reports of obstetrics among the South American Indians, where the need for obstetrics probably is not very great. Usually women in childbirth are assisted by other women who apply some massage. The intervention of the shaman, if there is any, seems limited to the blowing of tobacco smoke and the recitation of some spell (*Yecuana*, *Rucuyen*). In some tribes, women are prepared for delivery by magic operations, such as depilation (*Huambisa*, *Naupe*).

## PROPHYLAXIS

The South American Indian is well aware of the necessity of prophylaxis against disease. But his methods of prophylaxis are adapted to his magic disease concepts and thus are either overlooked by the civilized observer or strike him as being rather inefficient.

Most South American tribes, for instance, pierce one or another part of the body, usually the ear lobes, lips, and nasal septa, and often insert in them sticks or ornaments. There is little doubt that these measures, though predominantly ornamental, are also designed to prevent disease spirits from entering the body.

Painting the body (*Siusí*, *Cubeo*, *Tupí*, *Lengua*, *Chiriquano*) and smearing with blood (*Carib*, *Guamo*, *Abipón*), are also believed to afford protection against disease.

Scarification is used not only for healing but for prophylatic purposes (e. g., *Cumana*, *Sirionó*, *Carajá*, *Taulipáng*). A special case of scarification is a kind of inoculation against snake bite. Snake bite is usually treated with sucking, with drugs (*Uchiri*, *Carajá*) or with charms (*Yagua*), but the Indians of Colombia and the *Lengua* practice a kind of inoculation, rubbing snake ashes into scarifications.

Tattooing as a prophylactic measure is reported from the *Chorotí*, *Guarayú*, and *Tupinamba*, especially in mourning. Finger amputations are also thought to give protection against the disease of the deceased (*Charrua*, *Minuane*). The *Yecuana* and *Taulipáng* use flagellation as a prophylactic. Prophylactic purposes may also enter the widespread custom of skull deformation. The *Toba* dance and the *Arawak* and *Mosetene* wear amulets to ward off disease. To protect themselves against disease, the *Paje* fumigate a foreigner, and the *Macushí* and *Tehuelche* subject a menstruating woman to smoke. Other rites, such as burial rites (*Macushí*, *Guahibo*, *Bororo*), rites performed over a slain animal (*Bororo*, *Yecuana*), and those held for a newborn infant (*Tehuelche*, *Tecuna*, *Tupí*, *Marhano*, *Passé*, *Manaos*) serve the same purpose. The custom of wearing penis envelopes (*Bororo*) or tying up the penis (*Trumaí*, *Carajá*, *Bororo*) is probably a magic procedure, comparable to the use of the nose ring or lip plug, but in addition the penis envelope also affords actual protection against insects. The manufacture of mosquito nets from bark cloth (*Yuracare*, *Guató*, *Mosetene*), though directed only against mosquito pests as a nuisance, had certainly prophylactic value. The *Chiriguano* try to stop epidemics by erecting posts into which magical signs are carved. Many tribes of the Chaco and the upper Amazon simply flee at the first signs of a smallpox epidemic.

## THE SHAMAN

The shaman, or medicine man, being a religious functionary no less than a healer and sorcerer, has been described in the article on Religion and Shamanism (this volume, p. 588). It need only be mentioned here that his power to cause and cure disease are of supernatural origin, conforming with the concepts of the supernatural and magical causes of disease. The shaman's nonmedical functions, such as divining, prognosticating, performing magic, leading ritual, controlling weather, and exercising political power, and his acquisition of supernatural powers, his training, and his paraphernalia are described elsewhere.

### KILLING OF THE SICK, ETC.

Deformed or sickly children are often killed (*Choroti*, *Maina*, *Manaos*, *Canelo*). Killing of diseased people is recorded from the *Bororo*, *Toba*, *Mundurucú*, *Tupí*, *Zápara*, *Ipurina*, *Itonama*, *Wapishana*, *Masuruna*, *Maipure*, *Witoto*, *Mbayá*, and *Lengua*. The *Yuracare* commit suicide in the case of incurable disease. The *Mojo* killed women who had a miscarriage. Belief that one is bewitched may often lead to death by autosuggestion ("thanatomania"; *Lengua*, *Yagua*).

### SUMMARY

The medical practices of the non-Andean South American Indian are characterized principally by:

1. The prevalence of the concept of object instrusion, spirit intrusion, and soul-loss as disease causes.
2. A standard shaman's procedure consisting of: (*a*) singing and smoking; (*b*) a trance induced by intoxicating drugs; (*c*) massage and sucking; and (*d*) the application of drugs.
3. The widespread use of bleeding, enema, and diets.
4. Ritual prophylaxis, such as piercing the lips, ears, etc., painting, tattooing, etc.
5. The exhalted social position of the medicine man and the great hardships to which he is subjected during the initiation period.

## MEDICAL PRACTICES OF THE INCA AND EARLIER CENTRAL ANDEAN CIVILIZATIONS

The native people whom the conquistadors encountered in the Central Andes had been for more than 1,000 years the bearers of a civilization which compares favorably with the early high cultures of the ancient world. The development of social organization and great material wealth of these people was not without consequence for their medical practices. A separate treatment of the medical practices of the *Inca* and their predecessors is consequently necessary, even though it has the shortcomings of a historical reconstruction based mostly on chronicles and archeological material. Modern field studies of the remnants of a decapitated and thoroughly destroyed civilization cannot give other than rather irrelevant results.

### CONCEPTS OF CAUSES OF DISEASE

The dominant theory of the *Inca* Empire seems to have been that disease was caused by sin. This represents an elaboration and intensification of the idea of taboo transgression as a cause of disease. "Sins" which could provoke the gods to punish with disease (including deformities) were sorcery, murder, theft, fornication, adultery, laxity in the observation of religious duties, and disobedience of the *Inca* Emperor, or the intention to commit these sins. As the whole fabric of the society was the work of the gods, the Emperor being a god himself, offenses of a social and a religious nature were of an identical character. The switch from mere magical to religious and social thought is significant. Whereas the other South American Indians regarded disease as a natural catastrophe, personified in the nature spirit, the *Inca* attributed it to disturbances in the socio-religious structure.

The remedy for disease caused by sin was confession. A special category of priests (ichuri), including both sexes, were charged with accepting such confessions. The confession proper was accompanied by a purificatory rite consisting of sacrifice, flagellation, spitting by the priest and patient on a basket of grass which was thrown into a stream, and bathing by the patient.

Not only one's own sin, but that of relatives could cause disease, in which case the relatives had to undergo the purification rite. The Emperor could confess only to the Sun. In case the Emperor was sick, his whole people had to confess. It is interesting that the *Inca*, builders of one of the most systematic state apparatuses of all times, did not fail to use such powerful psychological mechanisms as the fear of disease and the urge to confess as means of strengthening their rule. Confession was also used in *Aztec-Toltec* culture, and the trend towards priest medicine is common to Peruvian and Mexican as well as to Babylonian and Egyptian medicine.

A second important *Inca* disease theory was that sickness was caused by winds and seasons. Though this is still mainly a magico-religious theory, the winds being personified by nature spirits, a rational element in this theory, which subjects the will of the spirits to the laws of the calendar, is indisputable and highly significant. Certain diseases were regarded as bound to the season: rheumatism, melancholy, epilepsy, eye-troubles, kidney diseases and dropsy, colds, "pest of the noblemen" (syphilis?), scabies, fevers, "valley-disease" (leishmaniasis), and diarrheas. The seasonal character of the last was explained by the consumption of unripe fruits and vegetables and by humidity during the period of rains.

The modern *Aymara* and *Quechua* still have the notion that disease might be caused by violations of the ancestor cult or by natural factors.

Of other disease concepts such as soul-loss, object intrusion, and sorcery, we know little more than that they too existed. In so highly a stratified society, in an empire so widespread and composed of people of so many origins and traditions, we should suppose that, in spite of the rubber-stamp policy of the *Inca*, strong local and social differences in disease concepts persisted and that the "minor concepts" of disease mentioned above might have played an important role in different periods, places, and social classes.

### DIAGNOSTIC METHODS

Diagnosis was easy in the case of confession, but otherwise had to be based on different divinatory procedures. Trance of the healer after fasting or intoxication seems to have been fairly widespread. Some diagnosticians divined by means of the position of maize kernels or coca leaves. Divination was usually connected with sacrifice to the diviner's guardian spirit.

A curious diagnostic-therapeutic procedure was a transference rite, the "purification with the guinea pig," which seems to have started the unhappy animals' association with medicine. The guinea pig was held over the body of the sick person so as to absorb the disease; then it was killed, and the diagnosis was made from the appearance of its internal organs.

A step toward more rational methods of diagnostics was examination of the appearance of the tongue to ascertain whether it were coated. In general, there is no record of urine or pulse lore, except that Garcilaso reports the Emperor Atahaullpa's pulse was taken in the nose.

### THERAPEUTIC PROCEDURES

Certain *Inca* ritual was believed to have a healing effect: confession, flogging, sacrifices. Sacrifies were extremely numerous; in case the Emperor were ill, even human beings were sacrificed. If a man had a very dangerous disease, he would sacrifice his oldest son.

**Materia medica.**—The conquistadors were greatly impressed by the Indians' wealth of drugs and tried immediately to gain as complete a knowledge of the native materia medica as possible. They were little disturbed that the action of the drugs was explained by magic powers, the less so because the effect of many of their own drugs was still understood the same way.

The number of medicaments obtained from the vegetable kingdom was very great. The leading drug was the holy coca, used as local anesthetic and as a stimulant. The famous modeled pottery jars of the Early Chimu Period show that coca was chewed then. According to Garcilaso, the production of coca constituted the greatest source of wealth for the country. Its use and distribution was regulated by the Emperor, apparently with good success. Tobacco was equally used for medical purposes and applied in the form of snuff.

A great many of the vegetable drugs were emetics and purgatives (*Euphorbia huachhanhana; Jatropha curcas; Schinus molle*). Numerous vegetable drugs were used to cure diarrhea, toothache, rheumatism, and skin and eye diseases. Peter de Osma, the Peruvian informant of Monardes, mentions diuretics, drugs against fluxes and sore throat, and wound powders made from the balm tree (*Myroxylon peruiferum*). Father Cobo gives a long list of Peruvian drugs.

Peruvian herb doctors and herb collectors (collahuyas or chirihuanos) still travel all over Indian South America. The contents of their medicine chests have been described by Sir Clement Markham.

In view of the amazing botanical knowledge of the Peruvians in medicinal as well as in edible plants, it is somewhat surprising that the most important drug which Perú gave to the world, cinchona, was probably not part of the native drug lore and was discovered only during the first hundred years after the Conquest by an unknown person, Indian or European. It is now well established that the *Quechua* medicinal plant, quina-quina, described by the early authors, was the tree of the Peruvian balm (*Myroxylon peruiferum*) and not cinchona. Myroxylon was already known to Monardes (in 1565), whereas the first description of the "arbol de calentura" (cinchona) by Calancha does not appear until about 70 years later. Though most Indians were very secretive about their remedies, it must be admitted that generally they were not very successful in hiding their knowledge from the hated invaders. Success in concealing from the Spaniards for almost 100 years a drug of such spectacular effectiveness as cinchona is particularly unlikely. The *Inca* authors, Garcilaso and Poma de Ayala, do not mention cinchona; it is found neither in tombs (as is coca) nor in the medicine chests of the collahuyas. Subsequently, beginning with La Condamine, the first European to give an exact description of cinchona, European travelers of the 18th and 19th centuries (Ulloa, A. Humboldt, Markham, Poppig, Spruce) have been struck again and again by the fact that the Indians not only were ignorant of the use of cinchona but positively refused to take it. The mysterious "blind spot" in Peruvian ethnobotany loses much of its mystery when we remember that cinchona is a specific against malaria ,which was unknown until the advent of the White man, who brought the ague, like so many other plagues, to the New World.

Numerous remedies were obtained from the animal kingdom. Fresh meat was put on inflamed eyes, as in the case of Father Acosta. Ointments prepared from the fat of the jaguar, llama, condor or rhea were rubbed on the body because of their supernatural powers. Blood of different animals (condor, vicuña, vicacha) was used against numerous diseases (nervous afflictions, mountain disease, cardiac ailments). Bezoar stones from the stomachs of vicuñas, deer, or llamas were highly prized. Cantharides were employed against warts. Human urine and umbilical cords were also "medicaments."

The Peruvian knowledge of mineral drugs is most impressive. Ointments containing mercury, sulfur, and arsenic, or their compounds, were used for the treatment of wounds, scabies, and leishmaniasis. Diarrhea was treated with a clay containing silicium, aluminium, magnesium, potassium, and ferrous oxide.

**Bloodletting.**—Venesection with knives made of obsidian flints was practiced both in treatment of disease and for sacrificial ends. Bloodletting and purging, according to Garcilaso, had more often a prophylactic than a therapeutic purpose.

**Enemas.**—Bulbed enema syringes and straight clyster tubes have been found in numbers in Peruvian tombs and are represented on modeled pottery jars of the Early Periods.

**Baths.**—Bathing in health and disease was very common among the Peruvians. The quality and number of bath houses in the ruins of *Inca* cities are most impressive. Spas (as, for instance, the sulfur springs of Putumarca) were known and used.

**Diet.**—Dietetic restrictions were used as treatment and, as a consequence of the numerous religious fasting periods, as indirect treatment.

**Miscellaneous.**—Among the purely magical therapeutic procedures, we have already mentioned transference. Though we have much less information on the magical than on the religious elements of *Inca* medicine, the former also seem to have been fairly well developed. Singing and dancing were employed in the treatment of disease. Sucking and massage to extract disease objects were widely used. The famous shamanistic trick of opening the body and cleansing the organs was practiced even upon the Emperor himself.

An original method of treating goiter was to expose the tumor to the bite of small snakes.

Among modern *Aymara* and *Quechua*, Nordenskiöld observed fumigation, bloodletting, and other rites to expel disease; sacrifices; and the use of clysters.

**Surgery.**—The late paleopathologist, R. L. Moodie, has expressed the following opinion concerning Peruvian surgery:

> I believe it to be correct to state that no primitive or ancient race of people anywhere in the world had developed such a field of surgical knowledge as the pre-Columbian Peruvians. Their surgical attempts are truly amazing and include amputations, excisions, trephining, bandaging, bone transplants [?], cauterizations and other less evident procedures. [Moodie, 1929.]

Wound treatment seems to have been very well developed: the tourniquet was probably known, and fine gauze and cotton were used for bandaging. Copper thumb forceps were employed to extract foreign bodies. Fracture treatment, however, was poor or nonexistent.

The percentage of trephined skulls (pls. 55, *c*; 56) attains an all-time peak in collections of Peruvian skulls. One of the skulls described by Escomiel bears no less than 5 trepanation holes. It seems that the majority of trepanations were made in order to relieve compression in punctured and comminuted fractures. The weapons used in ancient Perú—clubs with spiked stone or copper heads, spears, and especially slings—were particularly liable to produce such lesions. Another indication for the operation seems to have been brain tumor. We do not know whether there were any "psychiatric" (epilepsy, melancholy) or magic indications for trephining, as our knowledge of Peruvian trephining is exclusively based on archeological material. Strangely enough, no chronicle mentions trephining, though the operation was performed in Perú from pre-*Inca* times down to the beginning of the 20th century. (Pre-*Inca* trepanations are depicted on modeled pottery jars and on the handles of bronze knives.) It is remarkable that no "rondelles" (amulets from trephined skulls) have ever been found in Perú.

The operation was performed with instruments of lamelate silver, bronze, or copper knives (tumi). Scraping, sawing, and cutting, but rarely drilling, seem the technical procedures used. Besides oblong or round holes, well known also from Melanesian and European skulls, Peruvian skulls often show square openings (pl. 56, *top*, *right*). It seems that attempts were made to cover the gap with lead plates. Artificially deformed skulls, perhaps belonging to strata of society less exposed to battle hazards, rarely show signs of trepanation.

A remarkably old Peruvian operation was the opening of the probably inflamed sinuses of the frontal bone (pl. 56, *bottom*, *right*).

Early Chimu pottery vessels show other forms of major surgery, such as the amputation of a limb and the use of wooden protheses. An uninterrupted and heated discussion lasting 50 years has not yet definitely settled whether the extensive defects shown on lips and noses in Early Chimu pottery are spontaneous pathological lesions due to "Uta" (leishamaniasis), excisions in order to stop the disease, or ritual or punitive mutilations. As the lesions seem to be artificial, they would in either case be further evidence of the daring of Peruvian surgeons. It is most likely that the Peruvians used some form of local (coca) and general (intoxicants) anesthesia during operations.

No higher forms of obstetrics seem to have existed in Perú.

In spite of the numerous mummies found in Perú, the art of embalming appears to have been rather rudimentary. Mummification seems to have been mainly a consequence of the dry and either very hot or cold climate.

### PUBLIC HYGIENE

Perhaps the greatest medical accomplishment of the *Inca* was an extensive though unconscious and somewhat totalitarian system of public health. Well-built houses in carefully drained cities with an excellent water supply gave a sound foundation to the health of the people. Diet and sex life were carefully regulated in the sense of moderation. Regular working hours were observed on the public land. Uncleanliness and abuse of intoxicants were punished, and the use of coca was restricted.

Medical assistance was provided by public remuneration of the healers. *Inca* law required that surgeon, bleeder, and other healers should also be good herbalists. The sick and cripples were fed with produce from the "land of the clan." Asylums were provided for the disabled, and cripples were only used for light work. The restriction that cripples might marry only among themselves may even be regarded as a crude attempt of eugenics.

There was a definite understanding of the connection between acclimatization and disease. Highland troops served under a replacement system and remained only several months in the hot climates of the valleys. The ruthless but politically efficient system of transferring newly conquered populations and replacing them with trusted old subjects (mitimaes) was executed with full regard to climatic conditions. Populations were only transferred to climates to which they were already adapted.

The fundamentally socio-religious attitude of the *Inca* toward health and disease is reflected in the great prophylactic ceremony, the feast citua (fig. 189), which was celebrated in the capital, Cuzco, every year in September, at the beginning of the rainy and hence of the sick season. After a solemn procession of the statues of the gods, the Emperor himself sent four groups of warriors to the four directions to drive the disease spirits with loud cries out of the city. The inhabitants, shouting too, shook the spirits out of their clothes, and the feast was concluded by ritual baths, fumigation, and smearing the faces, doorsteps, and houses with a holy paste made of mashed maize.

### HEALERS

On no particular question of Peruvian medicine is our information so scanty and so contradictory as on those who treated diseases. Though Garcilaso's story that only the *Inca* aristocracy had professional healers and the rest of the people had to rely on household remedies is undoubtedly wrong, there is no doubt that the Emperors were served by a special class of healers taken from the ranks of their quipu scholars (amanta) and that, corresponding to the general dif-

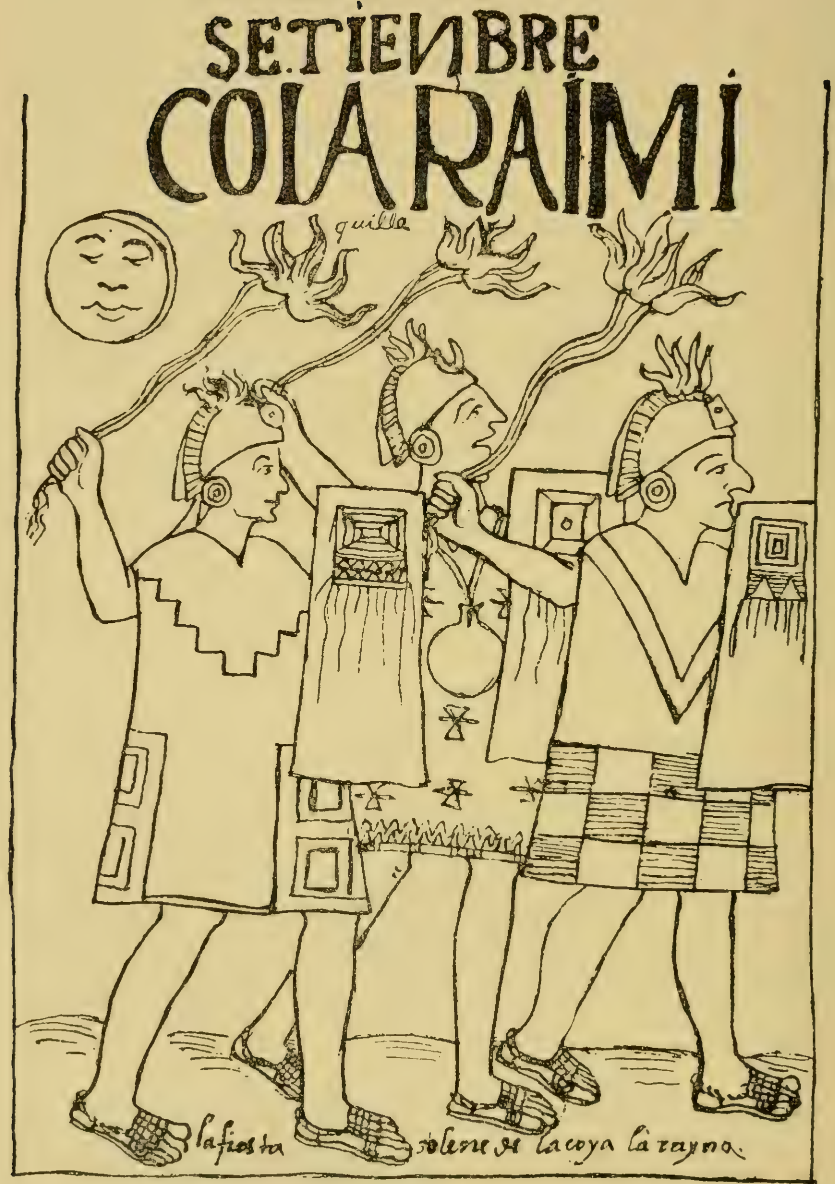
SETIENBRE
COIA RAIMI
quilla
lafiesta solene de lacoya la rayna

Figure 189.—Citua ceremony of the *Inca*. (After Guamán Poma de Ayala, 1936, p. 252.)

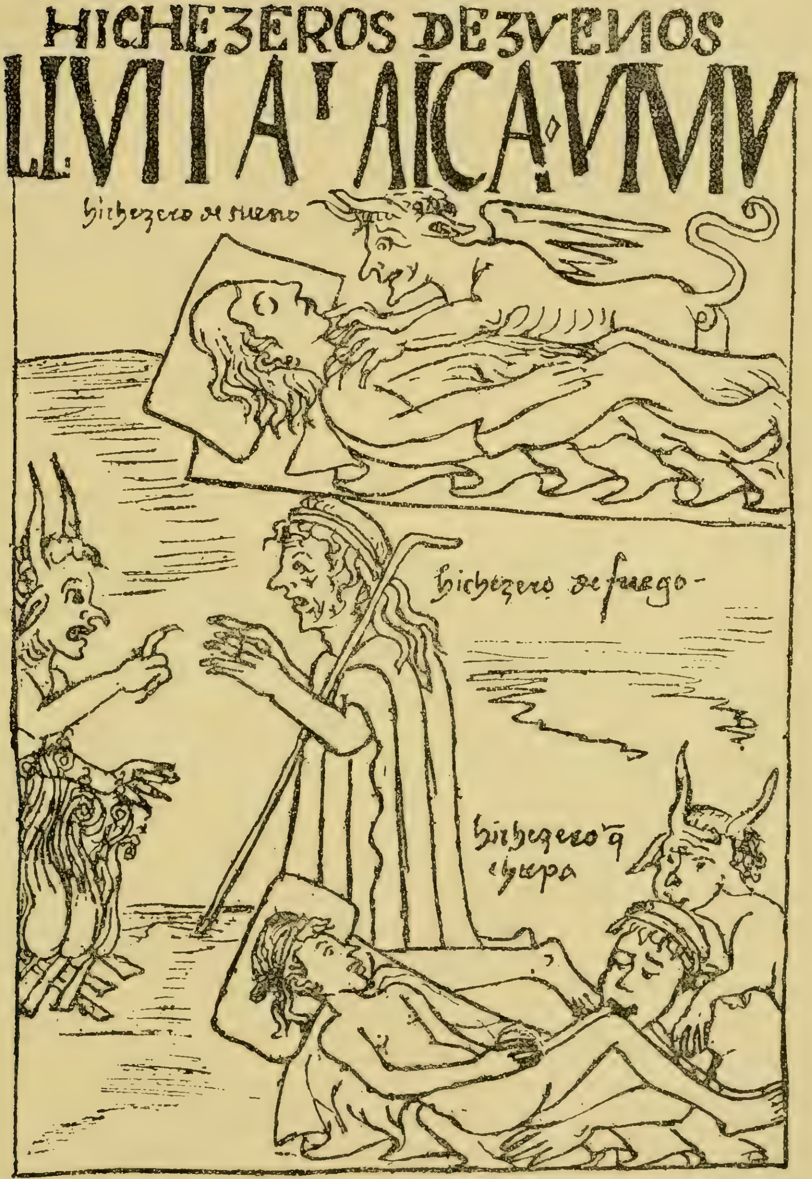
HICHEZEROS DEZVENOS
LIVII A AICAVMV
hichezero de sueno
hichezero de fuego-
hichezero q chupa

FIGURE 190.—Sorcerers of the *Inca*. (After Guamán Poma de Ayala, 1936, p. 279.)

ferentiation of the society, there were also regionally and socially different forms of medical personnel. We hear of a kind of craftsmen: surgeons (sirsek) and herb doctors or herb collectors (hampicamayok). In the latter category, women and cripples seem to have been numerous. We have already mentioned as healers the important class of priests, itchuri, who heard the confessions of the sick and also practiced divination and disease transfer. Another group of priest-magicians seems to have acted very much along the lines of the ordinary medicine man (singing, trance, sucking, etc.). (Fig. 190.) The title "kamasqua" (cured) applied to certain doctors shows that persons entered the medical profession not only through receiving a vision, through inheriting their office, or through being selected for it, but through recovering from disease. Emperor Pacachuti's rule that surgeons should also be good herbalists points to certain attempts to unify and standardize the healing profession.

The healers were supported by the products of the Emperor's fields or of the "fields of the Sun."

## THE CHARACTER OF PERUVIAN MEDICINE

In view of the uncritical praise of Peruvian medicine, based on nothing but the splendor of the general culture from which it emanated, it was a great step toward appraising the practices when Dr. J. B. Lastres, the eminent Peruvian historian of medicine, emphasized the fact that the elements of Peruvian medicine are definitely "primitive." This holds good not only for such practices as sucking of disease objects and divination but for trephining, found also among the Melanesians, the sin theory of disease and confession, known likewise to the *Eskimo*, and the sacrifices and extensive drug lore, reported also among certain Liberians, who do not even know how to make fire. But does this fact justify the conclusion that Peruvian medicine, therefore, is but another type of primitive medicine?

We do not think so. The existence of primitive elements is only of secondary importance. They survived in large numbers also in Western medicine up to the 19th century. The organization of the primitive elements into a new socio-religious structure, and the appearance of new approaches, such as taking into account the relationship of climate and health, make Peruvian medicine a different and "higher" type of medicine, standing closer to the medicine of the ancient cultures of the Near East than to any form of primitive, tribal medicine.

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## PART 2. JESUIT MISSIONS IN SOUTH AMERICA

By ALFRED MÉTRAUX

Anthropology owes a debt of gratitude to the Jesuits, who wrote so many excellent descriptions of the cultures of the South American Indians whom they converted. Their achievements in the field of linguistics were particularly impressive. They wrote "artes," catechisms, and dictionaries of countless Indian languages and dialects; the classification of South American linguistic families is still based to a large extent on Jesuit documents. At the end of the 18th century, Hervás, one of the Jesuits, compiled the material collected by his fellow missionaries and wrote the first textbook of South American languages.

The missionary work of the Jesuits was a decisive event in the history of many Indian tribes. In a little more than 250 years, the Jesuits extended their domination over the tribes of the upper Amazon, eastern Bolivia, the Province of Chiquitos, the Chaco, Paraguay, and the Pampas, while their colleagues in Brazil converted the Indians of the Atlantic Coast and of the lower Amazon. The expansion of the Jesuit missions was the equivalent of a "conquest," but is was truly a "spiritual conquest," for one of their cardinal principles was that they should never resort to the use of force.

The Jesuit missionaries were, as a rule, chosen with care. They were well trained and had irreproachable moral standards, great courage, and an excellent scholastic background. Thanks to their energy, intelligence, and skill, they succeeded better in their missionary efforts than any other religious order. In their well-organized missions the natives rapidly assimilated European culture and were safe from exploitation and want. These missions may well serve as examples of reasonable and humane colonization, for in spirit they were far ahead of their time. Faults and misconceptions that are apparent from a modern point of view resulted more from the ideas of that time than from any base motives. If too much virtue was expected of the natives, if their lives were too enmeshed in vain religious formalism, it was largely because the Jesuits wanted their neophytes to approximate as nearly as possible Christain perfection as they themselves conceived it. The prosperity and relative autonomy of the Jesuit missions excited the jealousy of the encomenderos, who, from the beginning, exposed them to calumny and attack. The Jesuits answered the encomenderos in order to justify their system and achievements. The controversies are responsible for a considerable literature that contains a great wealth of information on the missions and their history. As the Jesuits wielded a powerful influence in many great European countries in the 17th and 18th centuries, the polemics attracted public attention to the South American missions. The Jesuits "Lettres édifiantes et curieuses" and histories were widely read both by people who were interested in exotic countries and by philosophers who were curious about other types of mankind. Those who were involved in controversies about the primitive condition of men and the origin of institutions drew extensively on the Jesuit reports. As the Jesuits had been more successful in the 30 missions of *Guaraní* Indians of the middle and upper Paraguay and Uruguay Rivers than in any other part of South America, all persons who, for one reason or another, are concerned with the Jesuit missions have focused attention on those of Paraguay.

### METHODS USED BY THE JESUITS TO FORM THEIR MISSIONS

Though enemies of the Company of Jesus attributed the success of the Fathers to the use of armed force, there are few instances in which missionaries relied on troops to compel the Indians to accept their authority. As a matter of policy, their method of persuasion was by peaceful means. It was also a basic Jesuit policy to consider first the temporal needs of those whom they wished to convert.

Typically, one or two missionaries, followed by a small group of Indians, traveled to a tribe and there won friends by giving the natives presents of iron tools and miscellaneous goods. For this reason the missionaries usually were granted the hospitality that traders enjoyed in many regions. Later, after gaining the confidence of the Indians, the Fathers endeavored to persuade them to settle in a new village where they would be under the care of a missionary and would be amply provided with iron tools. So great was the desire of the Indians for axes and knives that in many cases they were willing enough to relinquish their liberty for a constant supply of tools. The Indians also were drawn into missions by the hope that, under the protection of the Fathers, they would enjoy a bountiful existence free from want. Another major reason for the Jesuits' success was the Indians' fear of enslavement by Spanish raiders. Indians who had suffered from such raids believed that only the missionaries could save them from total extermination.

After the Jesuits had succeeded in establishing a mission they enlarged their field of action by visiting neighboring tribes accompanied by neophytes. When a tribe remained hostile and obstinately refused to deal with them, the Jesuits would resort to another stratagem. Accompanied by a group of Christian Indians, they would kidnap a few members of the pagan tribe and carry them off to a distant mission, where they were well treated and instructed in the mysteries of the faith. After a few years the captives were released and sent home loaded with presents. In most cases these converts became valuable intermediaries between the missionaries and their fellow tribesmen.

The aboriginal dispersion and the inimical relations of different tribes were the main obstacles to good organization. The Jesuits always endeavored to gather as many people as possible in a single mission, but the Indians generally were reluctant to leave their own territory. Sometimes enemy tribes were brought together in a single mission, but it soon became obvious that this was a dangerous procedure, for the hostile groups would accuse each other of practicing witchcraft and would often engage in pitched battles (e. g., in the missions of the Marañón River). Consequently, the Fathers were obliged to multiply the number of their missions against their will and better judgment.

## POLITICAL ORGANIZATION OF THE MISSIONS

In the political organization of the missions, the Jesuits followed the Leyes de Indias[1] which prescribed that native villages should be administered as far as possible in the same manner as Spanish towns.

The dignity of the native chiefs, caciques, was retained even though their power was curtailed. The land of the missions was apportioned to the various caciques who, with their people, formed the settlement and were the nominal owners of the fields cultivated by their followers. According to the Spanish law, the caciques and their sons were exempt from tribute, a right that in 1657 was denied to the *Guaraní* caciques over the protests of the missionaries. In 1697 the caciques were assimilated to Spanish petty nobility and were treated like hidalgos, who could carry a sword. They were given a place of honor at church, were exempt from tribute and had the privilege of having their own fields cultivated by their "vassals," who, moreover, were obliged to show them obedience and respect. Caciques never were publicly reprimanded or punished. Since a mission generally was formed by several Indian communities, the number of caciques in a single reduction was sometimes very large (e. g., in 1715 in the Mission of San Ignacio there were 57 caciques). Generally, the mission officials were chosen from among the caciques.

The village itself was divided into burroughs (cuarteles) where the caciques resided. Each burrough was under the direction of a varista (see below).

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[1] Recopilación de Leyes de los Reynos de las Indias (1681).

The mission was "ruled" by a municipal council (cabildo) over which presided a corregidor. All the members of the cabildo, with the exception of the corregidor, changed annually on the first of January. The members of the new cabildo were designated or elected by the old one and had to be approved by the missionary and the governor.

The corregidor, who was selected by the missionary and confirmed by the governor, represented local civil authority; his tenure was probably for life. He was the highest magistrate and enjoyed no little authority and prestige. He was exempt from tribute. In his absence, the teniente corregidor was his substitute.

Also in the cabildo were two alcaldos, who were administrators, judges, and policemen, but who could not impose the death sentence. They acted as foremen in the supervision of communal work. The alcaldes de la hermandad had the same duties, but their jurisdiction was restricted to country districts.

The alférez real was the king's standard bearer in the community and had a seat in the council after the alcaldes.

The regidores, who were subordinate police officers without definite functions, completed the number of voting members of the council.

All the officers enumerated above were known as varistas because of the staff (vara) which they wore as a symbol of their rank.

The alguazil mayor was the general factotum of the council, but not a member. The council also had a secretary who kept the books and records.

The communal lands were under the supervision of a majordomo (mayor domo del pueblo), who was not a member of the council. He was assisted by "contadores, fiscales, and almaceneros."

The several groups of artisans—weavers, carpenters, etc.—and teachers were likewise under the supervision of minor officials called fiscales or alcaldes, who reported on their activities to the Fathers.

Native officials received no salary.

Despite this array of functionaries, the real power in the reduction remained in the hands of the missionaries. In each mission there were at least two priests: one, the cura, was the administrator and manager, and the other, the vicario or compañero, took care of the spiritual welfare of the community. No cabildo dared to challenge their authority. The members of the cabildo were obliged to report to the cura in the most minute detail the events that took place in the village. The Fathers also were kept informed by children, who were expected to tell them all the sins they had observed or heard about. A tightly knit spy system enabled the cura to keep his neophytes well in hand.

**Punishments.**—The Fathers themselves were the real arbiters in quarrels. Punishments generally consisted of: Flogging on the rollo, a pillar in the middle of the plaza. After being flogged, the Indian kissed the hand of the missionary and thanked him. Some wrongdoers were put in jail in the cepo. Heinous crimes (sorcery) were punished by jail terms and expulsion from the community.

## THE PLAN OF JESUIT MISSIONS

**Appearance of the mission.**—All Jesuit missions were built more or less on one plan, which was that of a Spanish town. In the center there was a large square plaza where stood the church, the house or college of the Fathers, the schools, the hospital, the storehouses, the guest house (tambo), and the house of the secluded women. The Indians' dwellings were disposed in parallel lines along streets running at right angles to one another. The houses were long, with walls of adobe or wattle-and-daub. Each was divided into apartments for single families. In the 18th century, stone was widely used in some missions not only for public buildings but also for the houses of the Indians. The Jesuits strongly objected to the communal houses of the Indians and soon introduced individual dwellings made of stone or adobe with tile covered roofs. Around each house was a porch supported by pillars.

**Education.**—In each reduction there was a school for boys and another for girls. The more gifted children, especially the sons of caciques and members of the cabildo, were taught reading, writing, and the elements of arithmetic. The most intelligent learned some Spanish and even some Latin, though their knowledge of the latter did not go beyond correct reading and pronunciation. Those with manual skills were admitted into workshops where, at an early age, they were trained in various handicrafts and arts.

The Jesuits, especially those who had come from Austria, attached great importance to music. Visitors to the missions declared that the songs heard at mass compared favorably with those sung in European cathedrals. The Indians went to work accompanied by music and returned in the evening in processions led by flute players and other musicians.

**Agriculture.**—When the Indians were gathered in a mission they were grouped according to their band or family allegiances, whichever was the normal social unit. Land was then assigned to the 20 or more caciques usually found in a mission, each of whom, in accordance with Spanish law, exercised right of eminent domain over his share. Actually, the cacique divided much of his tract of land among the several families under him for their individual use. A newly wed couple received a plot which they cultivated for their own needs.

Fields assigned to those engaged in industrial work and to those who served in the local militia were tilled by others, as were the particular fields of the cacique himself. In Paraguay, the land worked by a family was called abambae. Sowing and planting took place between the feast of Corpus Christi and Christmas; during this time everyone, even the artisans, worked in the fields.

Policemen, the alcaldes, saw to it that every family cultivated a plot larger than they would have had in premissionary times. Lazy persons were flogged. These provisions were precautionary measures to insure a surplus in case of famine or public distress and for purposes of trade by the Indians.

After the harvest, each family kept enough food for 2 or 3 months and stored the rest in communal granaries in bags which were marked with their name and were their exclusive property. The Jesuits justified this procedure by pointing out the improvidence of the Indians who, careless of lean months ahead, consumed their food as soon as it was garnered. By confiscating part of their crops, the missionaries imposed some restraint on them and helped them to develop a sense of economy. Even so, the Indians often ran short of food before the end of the year, so that the missionaries had to supplement their meager diet with the products of the tupambae.

The tupambae, or God's acre, was always one of the best pieces of land in the community. Communally tilled and exploited, the existence of these plots is the prime evidence of Jesuit collectivism. In some cases the tupambae was cultivated by the whole community on Saturdays and Mondays as a social service and a work of charity. In other cases it was cared for by a group of expert gardeners who were then paid out of the community chest, for which the tupambae itself was the main provision. The yield of the field was used to pay officials and messengers, and to support cripples, orphans, and other indigents. As a last resort, the communal harvest was distributed when famine afflicted the mission; sometimes part of the crops were sent to other distressed communities in the area.

The cattle herds of the mission formed part of the tupambae; i. e., they were the common property of the settlement. Some missions in Uruguay owned more than 400,000 head of cattle, which provided endless supplies of meat. It is said that sometimes as many as 20,000 head were brought back from a round-up of wild cattle. Cows were not milked. Oxen were given to the Indians to plough the fields, but the Fathers complained that they were neglected and also that the Indians never showed any willingness to raise cattle for their own use. At that time in Argentina and Uruguay, the half-wild herds were exploited by the Indians and gauchos very much as the buffalo were by the Plains Indians in North America.

The yerba maté collections also belonged to the tupambae and formed one of the main sources of money income for the missions. Every year groups of Indians were sent to the field to collect the leaves of the tree, which they roasted on the spot and transported back in skin bags. The expeditions, which occupied the Indians for 3 or 4 months during the year, were fraught with danger, although the Jesuits took great precautions to avoid hardship and loss of life. Part of the maté was consumed in the mission; the remainder was exported. The Jesuit maté was in wide demand for it was justly considered to be superior to other brands. The *Guaraní* Indians were extremely fond of maté and a daily ration was distributed to each family in the mission.

The Jesuits tried hard, and on the whole successfully, to improve native agriculture and to introduce new plants, such as rice, wheat, flax, and many other European species. They were particularly successful with oranges, which even today are one of the main products of the regions which they colonized. They succeeded by the end of their domination in cultivating bushes of maté in the missions, an art that was lost after their expulsion.

**Industries.**—The Jesuits spared no efforts to introduce various industries into the missions. They were rewarded by the Indians' readiness to accept all the innovations and their skill in many arts. These industries were taught by the missionaries themselves, many of whom were German, Austrian, or Dutch lay brothers who spent several years in the missions.

Father Sepp enumerated the following craftsmen in the mission of San Juan (founded in 1697): Brickmakers, carpenters, stone carvers, bakers, cooks, butchers, tanners, potters, joiners, goldsmiths, sculptors, painters, and various kinds of musicians. He adds that many European towns were not so well provided with technicians. Another Jesuit wrote in 1719, "We can hardly think of a craft which is not performed in our towns, so that we do not need outside help." Other artisans found in the missions besides those listed by Sepp were: Silversmiths, coopers, cartwrights, hatters, gilders, and house painters. With the help of *Guaraní* workers, the Jesuits even succeeded in making watches. They also introduced printing shops. In Loreto in 1705, Father Serrano printed an abbreviated *Guaraní* version of the "Temporal y eterno," by Father Nieremberg. Many works on religion, linguistics, and astronomy (almanacs) were published in the *Guaraní* missions.

Weaving was one of the main industries. Every week the women received some raw cotton and were obliged to return a certain amount of spun thread a week later. The spun cotton was then given to weavers, who made cloth for the community and for sale. Their salary was 6 yards of cloth. By the same system, wool was spun and woven.

**Trade.**—The products of the mission, especially maté, cloth, and skins, were taken to Santa Fe and Buenos Aires and there sold for money with which to pay tribute, or they were traded for goods needed in the mission, e. g., ornaments for feasts or for the church, salt, iron tools, etc. The Indians who had a surplus could sell it for their own benefit.

**Private property.**—Furniture, utensils, tools, and articles which the Indians made or bought with the work of their hands were their individual property. The crops harvested from their own fields also belonged to them. Some Indians sold their own yerba maté or their own sugar, but this was rare. Houses were owned during the lifetime of the inmates. Land, however, was not inherited. Some well-meaning but uninformed persons have made much of this fact, forgetting that in the Tropics under primitive conditions of cultivation, land has little intrinsic value, because after 3 or 4 years of use the soil is so exhausted that a new clearing must be opened elsewhere.

## COMMUNISM IN THE MISSIONS

The economic system of the Paraguayan Jesuits has been alternately attacked and praised as an attempt of the missionaries to realize a communistic society. Some writers saw in these missions the return to the golden age of Christianity. Montesquieu thought that the Jesuit system had been inspired by Plato's Republic, while other writers believed its organization had been influenced by Campanella. The Jesuits themselves always have taken great pains to deny the validity of these parallels and, indeed, when closely examined they are both superficial and misleading. The Jesuits had no desire to create a communistic state; on the contrary, they did their best to develop a sense of individual property among the Indians by encouraging them to plant a surplus to trade in the Spanish towns and by giving them cattle to build up herds of their own. Moreover, the Indians had considerable private property in the form of tools, ornaments, etc. Nor did the Jesuits foster equality among the Indians; instead, they established an aristocracy. The Fathers explained that the "communal" system prevailing in their missions developed either under stress of local cultural conditions or in conformity with the Leyes de Indias.[2] The system of land tenure was based partly on a *Guaraní* tradition that went back to pre-European times and partly on the exigencies of the situation and the need for special surplus stocks of food. In the past as in mission days each Indian community owned fields or clearings opened by the work of the whole community. The only novelty in the missions was the use to which the tupambae was put; a community chest of this kind was necessary in an agricultural community that was, nevertheless, partly dependent on a money economy. What does give the missions a socialistic flavor is the method of control of production and distributions of consumers' goods, but the Jesuits insisted that they adopted this policy only as a precaution against the Indians' incurable improvidence. The sharing of dwellings, which the Jesuits in fact tried to abolish, was no novelty to the *Guaraní*, who in pre-Hispanic times had customarily lived in big communal houses.

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[2] See footnote 1, p. 647.

The whole system was so well adapted to the missions founded by the Jesuits that after their expulsion the Spaniards were obliged to retain it in spite of several decisions made to destroy it. When the so-called communistic features of the mission villages were finally abolished in 1848, the situation of the Indians did not improve, but rather deteriorated. Many features of the Jesuit organization are in our day approved by persons who have to deal with modern Indians on the same cultural level as the *Guaraní* of Jesuit times.

# PART 3. THE NATIVE POPULATION OF SOUTH AMERICA

By JULIAN H. STEWARD

The population density per unit of area is a rough measure of the success of subsistence activities in the area, and it is correlated to some degree with cultural development. It does not throw much direct light on cultural problems, however, because mere densities show populations only in an average or statistical sense as if they were spread evenly over a region. Actually, large areas were temporarily or permanently unpopulated, while people clustered in bands or communities. It is the size, composition, and permanency of these communities which provide the setting for sociopolitical patterns and cultural behavior. The first section will give population densities. A subsequent section will relate settlement composition to sociopolitical types by presenting data on community size.

## METHODOLOGICAL PROBLEMS

The methodological difficulties inherent in studies of aboriginal American population are evident from the discrepancies in the results of reliable scientists. The Hemisphere totals vary from Kroeber's (1939) 8,400,000 (a figure less than Ricketson's (1937) 13,000,000 for Yucatán alone) to Rivet's (1924 a) and Sapper's (1924) 40,000,000–50,000,000 and Spinden's (1928) 50,0000,000–75,000,000. South American totals range from Kroeber's 4,300,000 to Rivet's 25,000,000; Means (1931) arrives at 16,000,000–32,000,000 for the Andes alone. Table 1 shows the breakdown of these estimates. It is obvious that either the data or the methods were at fault.

Previous population studies have dealt mainly with North and Middle America. All South American estimates, except that of Rosenblat (1945), who has carefully culled original sources, and a few estimates of limited areas, are made by analogy with North or Central America or by sheer guess.

Rosenblat reckons from the modern population of 1940 backward to 1825, 1650, 1570, and 1492. He accepts the more conservative contemporary estimates of each period, but 1570 yields data on only a few areas and 1492 is estimated by a hypothetic backward extension of the population curve. His method is shown in detail only for Haiti and Santo Domingo.

TABLE 1.—*Estimates of native American population*[1]

| Area | Population estimate according to— | | | |
|---|---|---|---|---|
| | Sapper (1924) | Rosenblat (1945) | Kroeber (1939, pp. 131-181) | Steward [2] |
| North of México | 2,000,000- 3,500,000 | 1,000,000 | 1,000,880 | 1,000,880 |
| México | 12,000,000-15,000,000 | 4,500,000 | 3,000,000 | 4,500,000 |
| West Indies | 3,000,000- 4,000,000 | 300,000 | 200,000 | 225,000 |
| Central America | 5,000,000- 6,000,000 | 800,000 | (3) | 736,000 |
| Total | 20,000,000-25,000,000 | 5,600,000 | | 5,461,880 |
| South America: | | | | |
| Andes [4] | 12,000,000-15,000,000 | 4,750,000 | 3,000,000 | 6,131,000 |
| Remainder of South America | 3,000,000- 5,000,000 | 2,035,000 | 3,334,000 | 2,898,000 |
| Total | 15,000,000-20,000,000 | 6,785,000 | 4,300,000 | 9,129,000 |
| Hemisphere total | 37,000,000-48,500,000 | 13,385,000 | 8,400,000 | 15,590,880 |

[1] All are for approximately 1492.

[2] The North American estimate follows Kroeber, 1939; México is from Rosenblat, 1945; other estimates are given in detail below. A preliminary estimate was given by Steward, 1945.

[3] Central America is included with South America.

[4] From Colombia to Chile.

Rivet (1924 a, pp. 599–602) notes that in North America the aboriginal figure of 1,148,000 has been reduced by one-third to the present population of 403,000. Assuming a similar reduction throughout the Hemisphere, he multiplies the present population by three to calculate the aboriginal figure, taking no account of local differences.

Sapper (1924), a geographer, bases his calculations on the assumed productiveness of different types of land use: in areas of hunting, fishing, and collecting the population will be sparse; in areas of cultivation, especially in the warm open highlands of México, Middle America, and South America, it will be dense. For example, modern and aboriginal Guatemala are assumed to have had about the same populations because their types of farming were about the same.

Kroeber's estimates for North America are based mainly on Mooney's dead reckoning; for other areas, they are made by comparison with North America, taking into account the cultural and natural areas. Kroeber assumes that: (1) most contemporary estimates, particularly by the early Spanish missionaries and administrators, were too high; (2) a competent ethologist may correct such estimates for an area he knows well; (3) modern populations give some indication of native populations, but the ratio of increase is not everywhere the same; (4) a rich ecology usually means a greater native density, but such factors as iron tools and friable soils must be taken into account in comparing modern and native densities; and (5) a rich culture is usually an index of a high density.

The data on South American demography are such that estimates reached by any methods can only approximate accuracy, and the margin of error will always be very great, perhaps as much as 50 percent. Contemporary estimates for the early periods come largely from soldiers and missionaries, but sometimes from administrators. Kroeber's suspicion of such estimates is certainly justifiable in the case of soldiers, who obviously exaggerated the number of their enemies. Missionary guesses of independent tribes were also liable to exaggeration. The careful counts of the Indians at mission stations seem reliable, and often they are our only source; but they do not take into account the Indians still at large, and they tend to lump Indians of different tribes. The value of administrators' estimates varies; in the Central Andes they seem to have been based on fairly careful census counts, but the ratio of tribute payers to the total population varied from 5 to 1 to 2 to 21 (Rosenblat, 1945).

For the Tropical Forest and Circum-Caribbean areas, we have few contemporary estimates. The earliest available figure may be anywhere from 50 to 200 years after the tribe was first contacted by Whites; disease, warfare, slaving, cultural and racial assimilation, and other factors already had reduced the population by half or more and in some cases virtually wiped them out. The *Omagua* were reduced from 15,000 to 7,000 between 1641 and 1681, and the Indians of Hispaniola were nearly extinct within a generation.

The modern Indian population is an unreliable index of the aboriginal, not only because each area has a distinctive population curve but because the modern censuses encounter great difficulties in counting Indians in remote areas and because in Hispanic America there is a tendency to classify Indians on a cultural rather than racial basis. An Indian is considered to be a person who lives like an Indian, especially one who speaks an Indian language; when he has acquired sufficient European culture he passes into the category of Mestizo, criollo, ladino, or caboclo, as the partially assimilated Indians are variously called, although racially he may be wholly or largely Indian. The method of projecting the population curve backward to aboriginal times would be valid only if the curve were first established on the basis of reliable counts at all periods. Even then, its applicability to tribes other than that for which it was constructed would be questionable, because too many factors are involved: whether or not the Indians remained in missions; the effect of disease; and special factors of their culture, environment, and contact with the White man. Thus, while the *Omagua* were halved in 40 years in the 17th century, the neighboring *Cocama* retained nearly their native numbers to the present day.

The present method utilizes the earliest data that appear to be reliable—in some cases missionary or administrator's reports, in others, travelers' accounts—and extends the density calculated for the tribe in question to others who had similar cultures and lived in similar areas. As the tribes seem generally to have declined somewhat by the time these estimates were made, the densities calculated from them are, even allowing for exaggerations, likely to be too small rather than too large.

## NATIVE DENSITIES

The present estimates are mere approximations and should be considered preliminary. Some areas, which are completely unknown, are estimated by analogy with neighboring areas for which reasonable samples exist. On the whole, this gives a fairly coherent picture so that the margin of error for certain areas is probably not over 10 to 20 percent. In some areas the error may reach 100 percent, but even to narrow the error this much is a considerable achievement in view of previous estimates. The obvious need is full utilization of source material in a tribe by tribe and area by area count like that of Kubler's and Rowe's for the Andes (Handbook, vol. 2, pp. 334–341, 184).

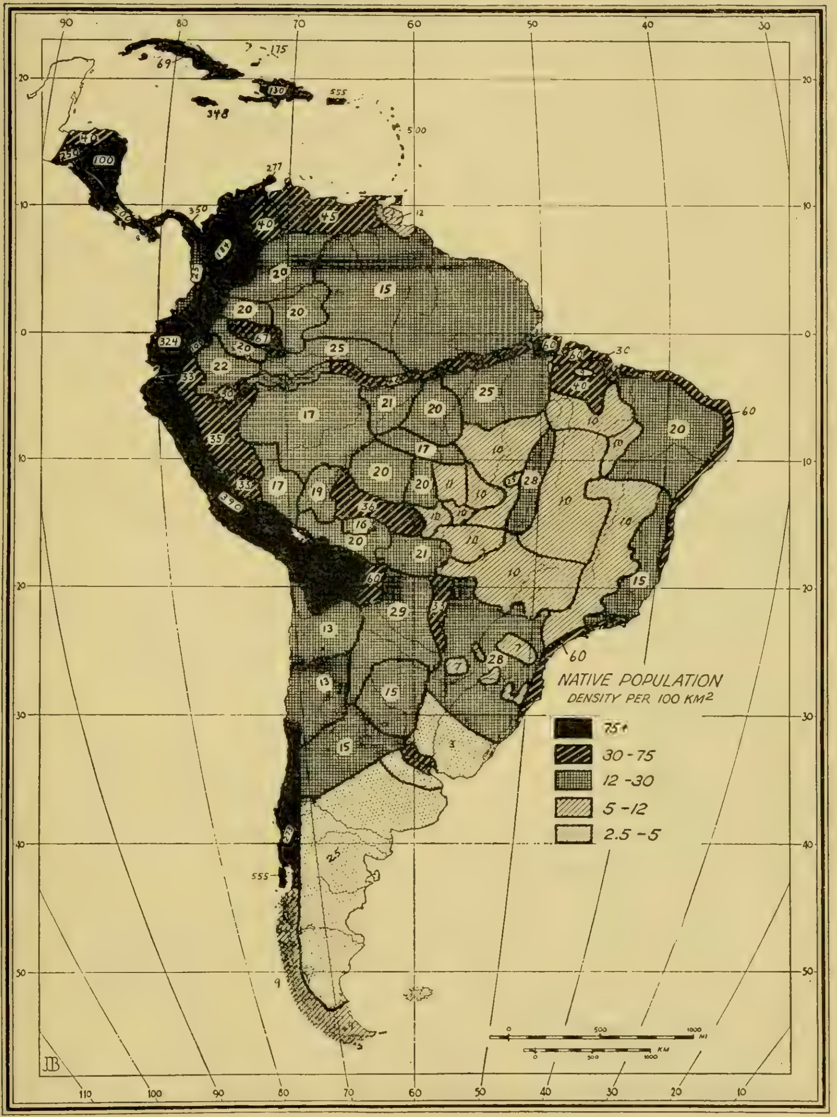
Map 16 follows Kroeber's map for North America (Kroeber, 1939) in showing the number of persons per 100 km.$^2$.

The estimates for the southern Marginal tribes are probably fairly accurate, although they were made well after the Contact. If wrong, they are too low. Early counts give the *Guaraní* and Chaco numbers which seem reasonable, but the *Abipón* would have a density of 5, which is revised to 15.

The *Araucanian* and Chilotan desities, the latter greater than the Central Andes, are surprisingly high. Even a reduction of the *Araucanian* estimate by half would leave a figure exceeding the densities of neighboring tribes; but the modern *Araucanians* number 300,000. If a native *Araucanian* population of 1,000,000 is not a gross error (see Rosenblat, 1945, pp. 77–78), Central Chile under Indian farming was far more productive than has been recognized. By contrast, the *Atacameño* figure, based on a small sample, is surprisingly low. Few portions of the North Chilean deserts are inhabitable, however, and the *Atacameño* total could not have exceeded 40,000 by much. The *Diaguita* must have had a density between 13, which is estimated for the *Atacameño*, and 15, which is fairly well established for the *Comechingón*.

The Marginal tribes of the plateaus of eastern Brazil are largely unknown. The average density of 10 per 100 km.$^2$, based on several seemingly reasonable samples of the upper Xingú-Tapajós area, is extended to the *Ge*. The slightly greater density of 15 for the *Botocudo* and their neighbors near the coast is a slight upward revision of several fairly recent samples of these peoples. By contrast, the coastal *Tupí*, to judge by certain of the *Tupinamba*, had a native density of 60.

In the Tropical Forest tribes of the Amazon Basin, several independent samples run fairly consistently between 17 and 25. There


NATIVE POPULATION
DENSITY PER 100 KM2
75+
30 - 75
12 - 30
5 - 12
2.5 - 5
MI
KM
JB

MAP 16.—Population densities of native South America. Numbers indicate persons per 100 km.² of territory.

are some Tropical Forest areas, however, which do not fit the general picture. The territory south of the upper Guaporé River in eastern Bolivia had 36 persons per 100 km.², according to what seem to be fairly good figures. Unless these are too high, the Yungas density of 20 may be too low. The Yungas also seem too low by comparison with the Montaña to the north; possibly the population of the Yungas, which came into contact with Whites at a very early time, was halved by the time estimates were made. The Montaña is high by comparison with the Amazon lowlands. Unless the missionaries erred in a very consistent manner in several independent Montaña estimates, it may be suspected that some of the lowland estimates, which generally are later, are too low. The *Witotoans* are an island of great density among comparatively sparse peoples. The figures taken from such reliable observers as Preuss and Whiffen may mean that estimates for neighboring peoples are too low; for the present, however, the inconsistency is allowed to stand.

Guiana is almost certainly too low. Figures are needed on the Contact Period. Recent samples give a density of about 10 per 100 km.²; natively, it must have been half again as great, perhaps more. Whether the swampy coast had an unusually high density is an open question.

The best source for Venezuela is Humboldt (1862), whose observations made about 1800 give sample densities of 38 per 100 km.². The native population was greater, but it is impossible to say how much greater without utilization of Contact Period sources. It is allowed a density of 45.

Colombia, too, needs to be reckoned for early sources. The present estimate accepts 300,000 for the *Chibcha* and 700,000—a density of 184—for the remainder of Colombia, a total of a 1,000,000, though some estimates allow the *Chibcha* alone 1,000,000. A reliable estimate of 1586 gives Colombia 715,000 (Rosenblat, 1945, pp. 77–78), and 1,000,000 for all native Colombia seems reasonable by comparison with Perú and probably not too large. Some chroniclers estimate the Popayán Valley alone at 100,000 to 500,000 persons, a density of 500 to 2,500 per 100 km.²

Highland Ecuador is reckoned entirely by analogy. A half million native population, which is close to the figure for the modern Indians, gives a density of 300 as compared with Perú's 390 persons per 100 km.². Certainly this figure is not too small; if, in Ecuador as in Perú, there are more Indians now than at the Conquest, it is too large.

Central America also needs estimates based on the early chroniclers. The present Indian population, which is extinct or greatly reduced in most areas, throws little light on native numbers. The few early samples suggest that the population was very dense in eastern Panamá, 300 persons per 100 km.$^2$, but thinned toward the west. Costa Rica, El Salvador, and the southern Highlands of Guatemala had greater density (200) than Nicaragua or northern Honduras (40).

The Antilles had a very large population, though its size frequently has been exaggerated. I have followed Rosenblat's conservative estimates even though his Hispaniola figure gives a density of 767, about twice that of any other area in America. The lesser Antilles, however, reach a density of over 500, to judge by certain samples. By contrast, Cuba, which the *Arawak* shared with the primative *Ciboney*, had a density of only 69.

In the table 2, the data are taken from Handbook articles except where the source is indicated.

TABLE 2.—*Native population numbers and densities of South American tribes*

| Area | Population | Size in units of 100 km.$^2$ | Persons per 100 km.$^2$ | Source and comments |
|---|---|---|---|---|
| Marginal Tribes: | | | | |
| Southern Marginal: | | | | |
| Archipelago | 9,000 | 1,051 | 9 | *Chono*, 1,000; *Alacaluf*, 400 after 1900; *Yahgan*, 3,000, 1875; *Ona*, 2,000, 1875–1900. |
| Pampas-Patagonia | 36,125 | 14,450 | 2.5 | Various 19th-century estimates. |
| *Querandi* | 4,000 | 1,000 | 4 | |
| *Comechingón-Huarpe*, etc | 52,550 | 3,570 | 15 | *Comechingón* native estimate 30,000 (Serrano, 1945). |
| *Charrua-Caracara* | 9,000 | 3,000 | 3 | By analogy with Pampas. |
| Total, Southern Marginal | 110,675 | 23,071 | | |
| Western Chaco | 186,400 | 4,320 | 29 | Earliest totals for main tribes (Métraux, Handbook, vol. 1). |
| Eastern Brazil: | | | | |
| *Bororo* | 16,000 | 1,600 | 10 | By analogy; recent estimates seem too low. |
| *Southern Cayapó-Guató* | 59,000 | 5,900 | 10 | By analogy; no data. |
| *Caingang* | 17,500 | 2,500 | 7 | Recent sample; may be too low. |
| *Bacaïri* | 6,000 | 600 | 10 | By analogy; no data. |
| *Nambicuara* | 22,000 | 1,100 | 20 | Good estimates (Lévi-Strauss, Handbook, vol. 2). |
| Upper Xingú | 10,000 | 1,000 | 10 | Analogy with *Nambicuara*, conservative reduction; Von den Steinen's 3,000 too low. |
| *Northwest* and *Central Ge* | 98,000 | 9,800 | 10 | Recent samples give 6 to 8 per 100 km.$^2$. |
| *Creye-Timbira* | 1,440 | 160 | 9 | By analogy, other *Ge*. |
| *Timbira* | 22,000 | 2,200 | 10 | No data; by analogy. |
| *Jeico* | 10,000 | 1,000 | 10 | No data; by analogy. |
| *Botocudo*, etc | 43,500 | 2,900 | 15 | Estimates of last century give density of 11 to 14 per kilometer.$^2$ |
| *Tapirapé* | 4,000 | 160 | 25 | 1910 estimate, 1,000; *Carajá* reduction by 1910 estimated at one-fourth original. |
| *Carajá* | 57,000 | 2,000 | 28 | Krause's estimate of 100,000 for 1845 reduced by one-half. |
| *Teremembe* | 21,000 | 700 | 30 | No data; density was probably half that of coastal *Tupí*. |
| Total, eastern Brazil | 387,440 | 31,620 | | |
| Amazon Marginals: | | | | |
| *Mura* | 30,000 | 1,400 | 21 | Reduction by half of early estimate of 60,000 native population. |
| Province of Mainas | 42,500 | 1,900 | 22 | Missionary estimates. |
| *Carijona* | 19,400 | 970 | 20 | Analogy; no data. |
| Others | ---------- | ---------- | -------- | Included with neighboring tribes for lack of data. |
| Total, Amazon Marginals | 91,900 | 4,270 | | |

TABLE 2.—*Native population numbers and densities of South American tribes*—Continued

| Area | Population | Size in units of 100 km.$^2$ | Persons per 100 km.$^2$ | Source and comments |
|---|---|---|---|---|
| Tropical Forest Tribes: | | | | |
| Eastern Chaco: | | | | |
| *Abipón* and neighbors | 50,250 | 3,350 | 15 | Earliest totals of main tribes (Métraux, Handbook, vol. 1). |
| *Payaguá, Chané, Mbayá* | 30,000 | 900 | 33 | Earliest totals (Métraux, Handbook, vol. 1). |
| Total eastern Chaco | 80,250 | 4,250 | | |
| *Tupí-Guaraní:* | | | | |
| Paraguay-Brazil | 200,000 | 7,200 | 28 | Estimate of 300,000 *Guaraní* killed or captured at Conquest reduced to 200,000; or 30 missions with 6,000 each in 1708. |
| Paraná Delta | 24,000 | 800 | 30 | By comparison coastal *Tupí*. |
| Upper São Francisco River region. | 49,000 | 4,900 | 10 | No data; analogy with *Ge* area. |
| *Cariri* and neighbors | 65,500 | 6,550 | 10 | No data; analogy with *Ge* area. |
| Coastal *Tupí* south of Amazon. | 189,000 | 3,150 | 60 | 4,200 km. of coast, 75 km deep. *Tupinamba* sample had 27,000 persons in 45,000-km.$^2$ Island of Maranhão, density of 906 per 100 km.$^2$ (Métraux, Handbook, vol. 3). |
| *Tenetehara* | 60,800 | 1,520 | 60 | By analogy coastal *Tupí;* an unknown number of *Amanayé* and *Turiwara* in area not counted. |
| Lower Amazon *Tupí* | 100,000 | 4,000 | 25 | Extensions of *Maué* density; *Maué* sample in 1939 gave 25 per 100 km.$^2$ Total may be too low. |
| *Apiacá-Cayabí* | 18,000 | 1,600 | 11 | Probably reliable estimate of 16,000 *Apiacá*, 2,000 *Cayabí*. |
| *Mundurucú* | 36,200 | 1,800 | 20 | Martius' estimate about 1880, and double that of Tocantins, 1877. |
| *Parintintin-Cawahíb* | 25,500 | 1,500 | 17 | By analogy neighboring *Tupí*. |
| Total *Tupí* | 768,000 | 33,020 | -------- | |
| Amazon River: | | | | These estimates allow 50 km. each side of the river. |
| *Cocama* | 12,000 | 400 | 30 | Missionary estimates. Today, about 10,000. |
| *Omagua* | 16,000 | 800 | 20 | Missionary estimates, 15,000, 1641; 7,000, 1681. |
| Amazon below *Omagua* | 72,000 | 1,800 | 40 | No data; analogy coastal *Tupí* and upper Amazon; Carvajal noted larger villages below mouth of Iça. |
| *Arua (Marajó)* | 30,000 | 500 | 60 | No data; by analogy coastal *Tupí*. |
| Total Amazon | 130,000 | 3,500 | -------- | |
| Southwest Amazon: | | | | |
| Juruá-Purús | 139,400 | 7,200 | 17 | By analogy from neighbors; present White and Indian about 100,000. |
| North of Guaporé | 46,000 | 2,300 | 20 | No data; by analogy with neighbors. |
| South of Guaporé River | 72,160 | 1,950 | 36 | Average of several estimates ranging from 25 to 45 per 100 km.$^2$ |
| Total Southwest Amazon | 257,560 | 11,450 | -------- | |
| Eastern Bolivia: | | | | |
| *Tacanans* | 25,000 | 1,250 | 20 | Mission estimates 40 to 150 years ago total 18,800; perhaps ⅔ were in missions. |
| Province of Chiquitos | 42,000 | 2,000 | 21 | Estimate of 23,788 in 1766, 200 years after Contact. |
| Province of Mojos | 6,000 | 400 | 15 | Estimate for 1680. |
| *Paressí* | 5,000 | 50 | 10 | |
| Yungas | 31,000 | 1,550 | 20 | Estimates are much lower; density of 20 per 100 km.$^2$ is by analogy. |
| *Chiriguano* | 48,000 | 800 | 60 | Fairly accurate early estimate. |
| Total Eastern Bolivia | 157,000 | 6,500 | -------- | |

TABLE 2.—*Native population numbers and densities of South American tribes*—Continued

| Area | Population | Size in units of 100 km.$^2$ | Persons per 100 km.$^2$ | Source and comments |
|---|---|---|---|---|
| Tropical Forest Tribes—Continued | | | | |
| Montaña: | | | | |
| Ucayali-Madeira | 31,740 | 1,800 | 17 | 1940 census. |
| *Campa* | 20,000 | 510 | 38 | 17th century missionary estimates; 1940 census gives 20,000 also. |
| Huallaga-Ucayali | 105,070 | 2,765 | 38 | Sample missionary estimates; analogy neighbors. |
| *Jívaro* | 26,600 | 700 | 38 | Stirling, 1938, pp. 28–38. |
| *Cofán, Quijo, Canelo* | 25,000 | 255 | 100 | Missionary estimates; see Rosenblat, 1945, pp. 77–78. |
| Total Montaña | 208,410 | 6,030 | -------- | |
| Northeast Amazon: | | | | |
| Amazon-Río Negro | 71,250 | 2,500 | 25 | Most conservative native estimate for *Yagua* used as sample. |
| Western *Tucanoans* | 16,000 | 800 | 20 | Estimate of 1635 gives density of 15 per 100 km.$^2$ adjusted to 20. |
| *Witotoans*, etc | 67,000 | 1,000 | 67 | Cf. Handbook, vol. 3, estimates, which seem too high by comparison with neighbors. |
| Uaupés-Caquetá | 45,000 | 2,250 | 20 | Total *Tucanoans* in 1900 is 8,700 or 10 persons per 100 km.$^2$; native density probably double this. |
| Eastern Colombia | 70,500 | 3,525 | 20 | By analogy. |
| Total Northwest Amazon | 269,750 | 10,075 | | |
| Guianas: | | | | |
| North of Amazon, Guianas, including Marginals. | 213,750 | 14,250 | 15 | Modern samples give densities around 10 persons per 100 km.$^2$; native must have been half again this, perhaps more. |
| *Warrau* | 6,300 | 525 | 12 | Gumilla, 1791. |
| Total Guianas | 220,050 | 14,775 | | |
| Northwestern South America: | | | | |
| *Motilones* and neighbors | 40,000 | 1,000 | 40 | Recent *Motilones* density is 25 persons per 100 km.$^2$ |
| *Goajiro* | 31,300 | 113 | 277 | 20th-century estimate. |
| Colombia Pacific Coast | 15,000 | 600 | 25 | Recent *Chocó* estimate gives density 17 persons per 100 km.$^3$. |
| Total Northwestern South America. | 86,300 | 1,713 | | |
| Sub-Andean Tribes: | | | | |
| Venezuela, north of Orinoco | 144,000 | 3,200 | 45 | Humboldt's estimates (1822–27) give 38 persons per 100 km.$^2$ in 1800. |
| Colombia: | | | | |
| *Chibcha* | 300,000 | 240 | 1,070 | Native estimates. |
| Remainder Highland Colombia. | 700,000 | 3,800 | 184 | Allowing 1,000,000 for Highland Colombia, minus 300,000 *Chibcha*. |
| Total Sub-Andean | 1,144,000 | 7,240 | | |
| Andean Tribes: | | | | |
| Ecuador | 500,000 | 1,800 | 300 | Handbook, vol. 2. |
| Southern Andes: | | | | |
| *Atacameño* | 40,000 | 3,008 | 13 | Salar de Atacama, 13 persons in 100 km.$^2$, 1581; total in 1800, 7,400 (Boman, 1908). |
| *Diaguita* | 41,000 | 3,160 | 13 | By analogy with Atacama prob ably estimates too low. |
| *Araucanians* | 1,000,000 | 3,650 | 273 | Native estimate (Cooper, Handbook, vol. 2). |
| Chiloé | 50,000 | 90 | 555 | Cooper. Handbook, vol. 2. |
| Total Andean Tribes | 1,631,000 | 11,708 | | |
| Central Highlands: | | | | |
| Highland Perú | 2,330,000 | 5,965 | 390 | Handbook, vol. 2. |
| Highland Bolivia | 1,170,000 | 3,000 | 390 | Handbook, vol. 2. |
| Total Central Andes | 3,500,000 | 8,965 | | |

TABLE 2.—*Native population numbers and densities of South American tribes*—Continued

| Area | Population | Size in units of 100 km.$^2$ | Persons per 100 km.$^2$ | Source and comments |
|---|---|---|---|---|
| Total South America | 9,228,735 | 182,507 | -------- | |
| Central America: | | | | |
| Eastern Panamá | 150,000 | 500 | 300 | Density probably near that of modern *Cuna*, 350 per 100 km.$^2$. |
| Western Panamá | 74,600 | 373 | 200 | Population of Panamá thinned toward west, with Chanaguena density 125 in 1709. |
| Costa Rica | 119,400 | 597 | 200 | Probably same density as western Panamá. |
| East coast Nicaragua and Honduras. | 180,000 | 1,180 | 100 | *Mosquito* density now 55; native was certainly double. |
| North coast Honduras | 25,000 | 500 | 50 | *Jicaque* density, 20 in 1674; *Paya* density, 50 in 1800. |
| Honduran Highland and El Salvador. | 187,500 | 750 | 250 | Modern *Lenca* density about 190; Kroeber gives 292 for El Salvador. |
| Total Central America | 736,500 | 3,900 | -------- | |
| Antilles: | | | | |
| Cuba | 80,000 | 1,147 | 69 | Rosenblat. |
| Jamaica | 40,000 | 115 | 348 | Rosenblat. |
| Bahamas | 20,000 | 114 | 175 | Half native estimate. |
| Haiti and Santo Domingo | 100,000 | 767 | 555 | Rosenblat. |
| Puerto Rico | 50,000 | 90 | 555 | Rosenblat; De Hostos (Handbook, vol. 4) gives 200,000. Some estimates were 600,000. |
| Lesser Antilles | 35,000 | 70 | 500 | 2,000 on St. Vincent in 1700; if 3,000 native, St. Vincent density is 750 density for Dominica is 375. |
| Total Antilles | 225,000 | 2,303 | -------- | |

## DENSITY, CULTURE, AND ECOLOGY

The population densities on map 16 represent approximations to absolute figures that have an error of from 10 to 100 percent. The relative densities are far more important to cultural problems, and the significance of error is greatly reduced if relative densities are considered. For example, by present estimates, the Central Andes had about 150 times the density of Patagonia. If the Patagonian population were doubled and that of the Andes halved, the former would have 40 times the density of the latter, which would still be highly important in terms of the numbers of people who may aggregate in sociopolitical groups. Assuming that the present figures are approximately correct, the densities seem to vary significantly among the cultural groups. Taking the Central Andes as the yardstick, it is found to have 44 times the density of the Chilean Archipelago, 14 to 40 times that of the other Marginal tribes, 20 times that of the Tropical Forest peoples, and about twice that of the Antilles, Highland Colombia, and Central America.

In ecological terms, the greatest densities were in the semiarid Andes, where subsistence was based on intensive farming, which employed both irrigation and fertilization. It has been estimated that in the Andes only one-half acre of cultivated ground was required to support each person as compared with 1 acre in native México and in the eastern United States (Kroeber, 1939, pp. 146–147, 163) and seven-tenths acre in Yucatán (Ricketson and Ricketson, 1937, pp. 16–17). The next greatest densities were in the Circum-Caribbean area, where the people relied on ocean resources as much as on farming. The situation is comparable to the Pacific Coast of North America, which, despite the absence of agriculture, had one of the densest populations on the Continent. Around the Caribbean, the additional agricultural resources supported many more people than on the North American coasts. The coastal and fluvial areas of the Guianas and Brazil were more sparsely populated than the Circum-Caribbean area, probably because of the decreased intensity of farming. One has the impression, however, that vast regions of potentially arable land were never utilized and that the population may have been expanding at the time of the Conquest. In the savanna lands scattered around the Amazon and Orinoco Basins and in the brush country of eastern Brazil and the Gran Chaco, where the tropical root crops could not be grown and the tribes were hunters and gatherers, the population was extremely sparse. The lowest density was the plains of Argentina, which though well adapted to animal raising and plough agriculture, did not yield to Indian farm methods.

## POPULATION TRENDS

The aboriginal population of South America is estimated at about 9,000,000, of which approximately half were in the Central Andes. (See table 3.) Today nearly 7,000,000 persons are classed, largely for cultural reasons, as Indians. (Some estimates double this figure.) There are several million caboclos, criollos, and Mestizos of various sorts, who, though predominantly Indian in race, are not classed as Indians in the census.[1] Biologically, therefore, there are considerably more than 7,000,000 persons of Indian ancestry. In fact, the Indian race is undoubtedly as numerous as at the time of the Conquest, and it has probably made a substantial net gain. The gain, however, is attributable entirely to the Andes. Elsewhere, the population has declined, though not always to the extent that the census indicates. The loss, which is primarily a function of the intensity and duration of European contact and of the aboriginal population density, varies in each area (map 17).

The greatest decline was along the coasts and large rivers, where the Europeans, water-borne and maintaining contact with the homeland, came with overwhelming force. The Indians of the coasts of Brazil,

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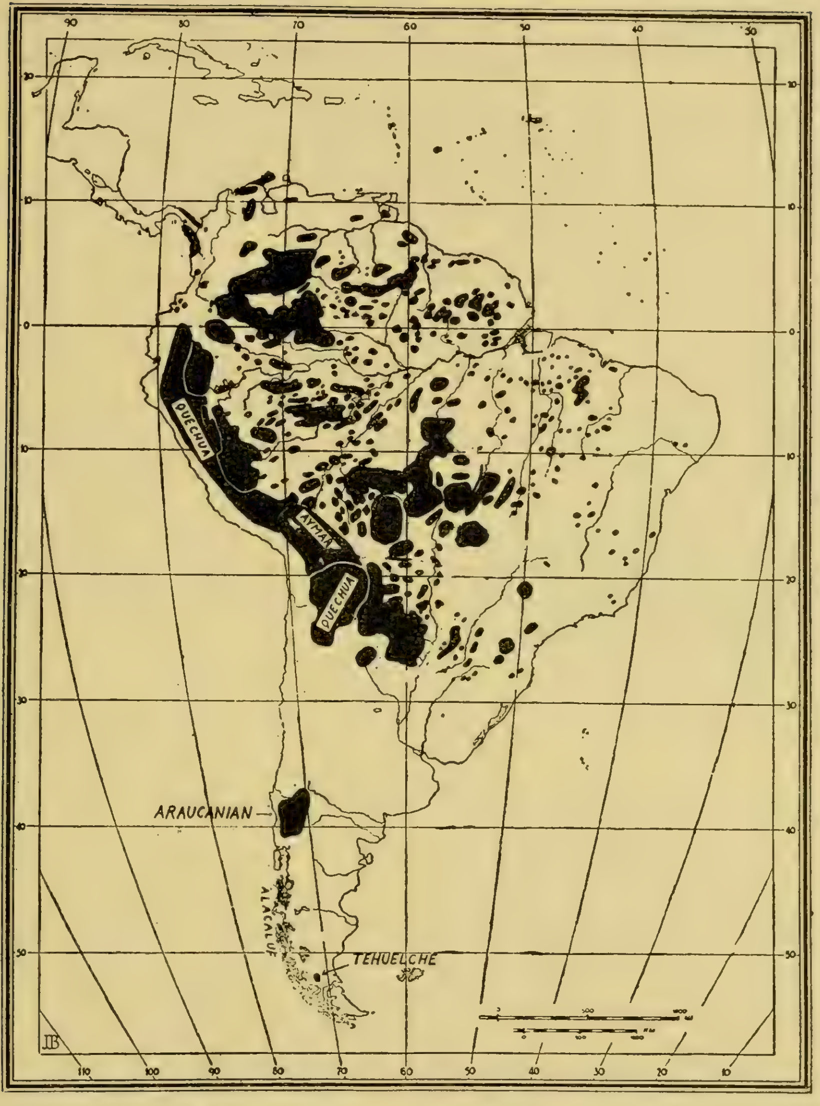
[1] Acceptance of census estimates may easily obscure the considerable numbers of Indians and consequently the true population trends in these countries. (See, for example, Shapiro, 1942.)

TABLE 3.—*South American Indian population*

| Location | Indian population in— | | Percent of national population (1946) |
|---|---|---|---|
| | 1500 | 1940 | |
| Southern Nations: | | | |
| Chile | 1,000,000 | 290,000 | 9.0 |
| Argentina | 300,000 | 120,000 | 1.0 |
| Uruguay | 20,000 | Extinct | 0 |
| Total | 1,320,000 | 410,000 | |
| Tropical, subtropical, and Circum-Caribbean nations: | | | |
| Paraguay | 100,000 | 60,000 | 6.0 |
| Brazil | 1,100,000 | 500,000 | 11.0 |
| Guianas | 90,000 | 11,000 | 2.4 |
| Venezuela | 350,000 | 103,000 | 3.7 |
| Antilles | 300,000 | Extinct | 0 |
| Lowland Colombia | 350,000 | 105,000 | 5.7 |
| Highland Colombia | 800,000 | 60,000 | 3.2 |
| Panamás | 70,000 | 42,000 | 9.0 |
| Costa Rica | 40,000 | 3,000 | 0.6 |
| Nicaragua, Honduras, and El Salvador | 100,000 | 85,000 | 9.0 |
| Total | 3,300,000 | 969,000 | |
| Highland Nations: | | | |
| Ecuador | 1,000,000 | 960,000 | 50.0 |
| Perú | 3,500,000 | 2,800,000 | 40.0 |
| Bolivia | ---------- | 1,800,000 | 51.0 |
| Total | 4,500,000 | 5,560,000 | |
| South American total | 9,120,000 | 6,939,000 | |

the Guianas, Venezuela, Colombia, Central America, and Ecuador, though very numerous, were quickly submerged; along the Amazon and Orinoco they also suffered a rapid decline. In these areas, their place was partly taken by Negroes from Africa. In most of the coastal and fluvial areas, the very identity of the native tribes is in doubt. In the Antillean islands, which may be regarded as entirely coastal, the Indians were nearly extinct within a century and a half. Las Casas estimated that the native population of Puerto Rico and Jamaica had shrunk from 3,000,000 (a figure that is much too high) in 1509 to 200 in 1542.

As the Europeans penetrated inland along the Amazon and Orinoco, the Indians gradually succumbed, some perishing, others becoming culturally assimilated and adding their blood to that of the Whites and Negroes to form mixed populations. Today the main survival of Indians is in the areas beyond easy navigation, i. e., in the great U which surrounds the Amazon Basin and includes the Amazon-Orinoco watershed, the Northwest Amazon, the Montaña, Mato Grosso, parts of the Chaco, and the eastern Brazilian plateau. This was precisely the area of Marginal and Semi-Marginal tribes, who, in pre-Colombian times had remained comparatively uninfluenced by the Tropical Forest type of culture, which was also water-borne. (Compare the culture types, map 18, and the distribution of modern Indians, map 17.) Elsewhere


90
80
70
60
50
40
30
QUECHUA
AYMAR
QUECHUA
ARAUCANIAN
ALACALUF
TEHUELCHE
110
100
90
80
70
60
50
40
30
20
10

Map 17.—Distribution of Indians in 1940.

in the Tropical Forests and around the Caribbean Sea, the Indians who survive today live mainly in areas that are unsuited for European occupation, such as the swamps of the Orinoco Delta and of the Mosquito Coast in Nicaragua and the mountainous areas of western Venezuela and Central America.

In Argentina and Uruguay, where the native population was sparse, the coastal tribes were also first to succumb. Later, the Europeans swept inland, finding the country suitable for their economy, and the

Indians have all but vanished. In Chile, the story was the same except that the *Araucanians*, driven south but not surrendering, were finally isolated on a reservation.

There were numerous factors in this decline, and their operation in different localities made for very unlike population curves. (See Rosenblat, 1945.) European diseases, which were most devastating where the Indians were concentrated, as in missions or forced settlements, wiped out some tribes within a century or two, whereas immediate neighbors survived in some strength to the present day. Warfare, both with the Whites and with tribes dislocated by the Conquest, took a terrific toll. The Indians also suffered from disrupted economic and cultural life. It is perhaps premature to guess whether better health measures and reservation systems will check this decline.

By contrast to the remainder of South America, the Andes, especially the Central Andes, have more Indians today than at the time of the Conquest. As elsewhere, the Coast suffered most from White contacts, but later the Whites penetrated the interior and the total population was probably halved. Aboriginally numerous, culturally stable, and comparatively unaffected by epidemics, it has recovered and is now larger and increasing.

# PART 4. SOUTH AMERICAN CULTURES: AN INTERPRETATIVE SUMMARY[1]

By JULIAN H. STEWARD

## INTRODUCTION

It is the purpose of the present article to provide a basis for classifying South American Indian cultures and to present comparative summaries of the principal cultural types in terms of their ecological adaptations and historical development. It endeavors to reduce the bewildering variety of cultural data to categories which have a real and historical meaning. In this respect, it differs from the method of historical particularizing which treats each tribe and culture as unique, emphasizing their peculiarities and stressing the exceptional rather than the general. The latter method is valuable in detailed analyses of individual tribes, but, applied to large areas, it gives the impression that cultural elements and patterns occur in a random and fortuitous manner.

Admittedly, an attempt to subsume large numbers of tribal cultures under general types, as undertaken here, encounters difficulties presented by borderline cases, by insufficient data, and by possible misinterpretation of data. The general character of the main cultural types will doubtless have to be redescribed in the light of new information and more detailed comparisons, and many tribes will quite probably be found to belong to types other than those to which they are here assigned. Authors familiar with certain tribes will find that the generalizations do not do their tribes justice. Science will be best served, however, by correcting faulty generalizations with better generalizations; carping at these constructs because a few special facts do not fit them can only lead to the impression that culture development is utterly capricious and haphazard.

The fourfold classification used herein (map 18) corresponds in general to the four volumes of the Handbook—Marginal tribes, Tropical Forest peoples, Circum-Caribbean and Sub-Andean peoples, and Andean civilizations—except that in retrospect it is evident that many

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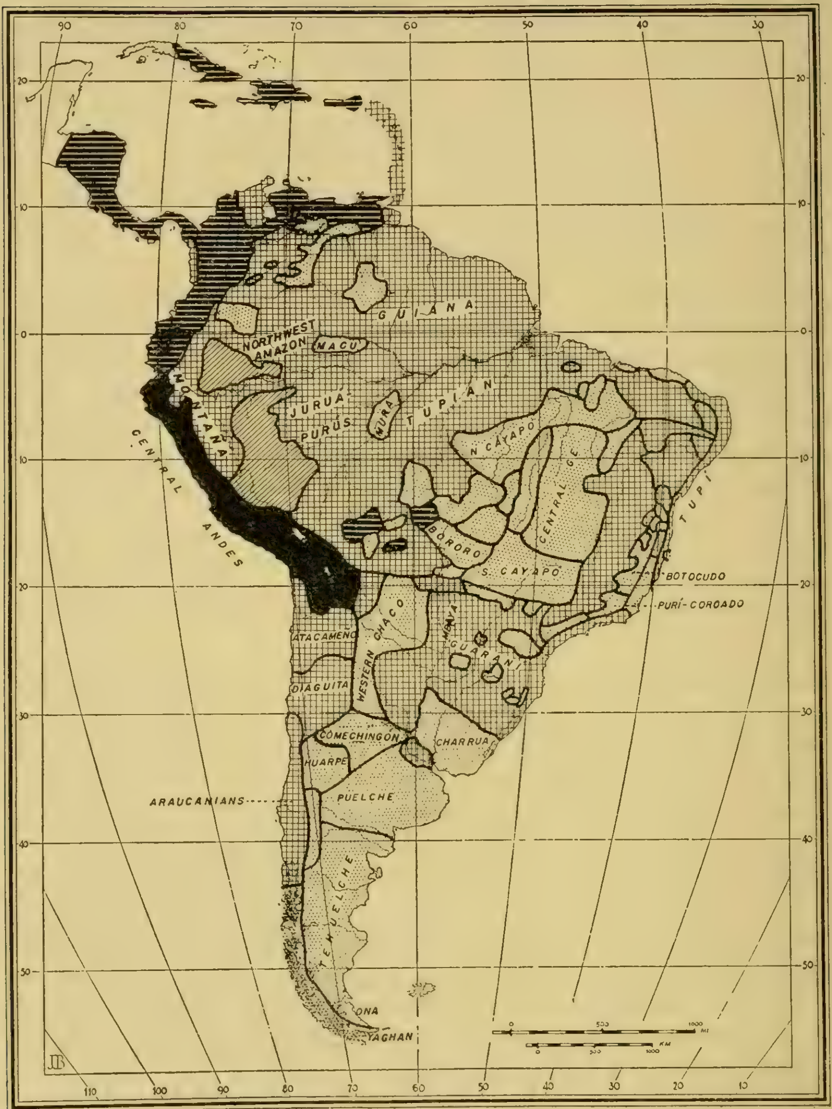
[1] I am grateful to Drs. A. L. Kroeber, Robert H. Lowie, W. D. Strong, John M. Cooper, and Gordon R. Willey for having read and criticized this summary.


90
80
70
60
50
40
30
20
10
0
NORTHWEST AMAZON
MACU
GUIANA
JURUA
PURUS
MURA
TUPIAN
MONTANA
CENTRAL ANDES
N. CAYAPO
CENTRAL GE
TUPI
BORORO
S. CAYAPO
BOTOCUDO
PURÍ-COROADO
ATACAMENO
WESTERN CHACO
MBAYA
GUARANI
DIAGUITA
COMECHINGON
CHARRUA
HUARPE
PUELCHE
ARAUCANIANS
TEHUELCHE
ONA
YAGHAN
0
500
1000
MI
KM
110
100

Map 18.—Distribution of aboriginal culture types. (Solid black, Central Andes; horizontal hachure, Circum-Caribbean; cross-hachure, Tropical Forest and Southern Andes; diagonal hachure, Semi-Marginal; stipple, Marginal.)

tribes were improperly classified. In the preceding volumes of the Handbook, the tribes were classed more or less on the basis of impressions. The classification, like previous ones,[2] used principally the general element content of the cultures rather than a systematic comparison of the patterns. Special weight was accorded one or another feature in each case. The Marginal peoples were distinguished by their lack of farming and their generally simple cultures; the Tropical Forest peoples were identified by their agriculture and various material traits, which were adapted to the tropical rain forests; the Circum-Caribbean and Sub-Andean peoples were grouped together because of their class system and temple cult; and the Andean peoples, from southern Colombia to Central Chile and Northwest Argentina, were distinguished by their Central Andean technology, material culture, and ritual complex.

The present classification is based primarily on sociopolitical and religious patterns. Culture elements are accorded secondary importance because too many of them are independent variables. Their distributions were dissonant with those of the sociopolitical and religious patterns, and they occurred in quite different patterns. They were the building materials of culture and did not greatly affect the architecture. The bow and atlatl, for example, occurred in widely differing patterns of hunting and warfare. Ritual elements, such as hair cutting, flagellation, or the scratching stick, served a very different purpose in each local context. Deities, such as the sun or stars, were variously mythological characters, shamans' spirits, or tribal gods. Items of adornment, such as face painting, tattooing, and earplugs, were badges of tribal membership, sex, society affiliation, or class status, according to the tribal patterns they entered. Even element complexes, that is, stable groups of elements, were found in different settings. For example, the initiation of boys into a secret organization, which used a sacred trumpet to represent the voice of the gods, was part of an ancestor cult in the northwest Amazon and of a priest-temple cult among the *Mojo*.

A classification based on culture elements would not at all correspond to one based on sociopolitical patterns. In terms of culture elements, eastern Bolivia would be classed with the Tropical Forests, and the Northern and Southern Andes would be included with the Central Andes. The Circum-Caribbean peoples would belong with the Tropical Forests if material elements were emphasized and with the Andes if social and ritual elements were given more weight. Culture elements have greatest classifactory significance in the case of the Marginal peoples, who, though very heterogeneous, differed from all other South American tribes in certain important absences. They characteristically lacked agriculture, loom weaving, twilled and woven basketry, dugout canoes, and a considerable list of lesser items found among their neighbors.

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[2] Wissler's five-fold grouping (1922), Cooper's three-fold (1942), and Stout's nine-fold (1938).

The patterns chosen herein as the basis for classification are those which integrate the institutions of the sociopolitical unit. The unit is the cohesive group whose members live in more or less permanent association with one another, participate in the same economic, social, and religious activities, and submit to the same in-group sanctions and political controls. It is the group of persons whose varied and reciprocal behavior patterns form a self-contained cultural whole. It is sometimes but not always the tribe; the term "tribe" is often applied to a group of units which, though culturally and linguistically similar, are politically independent of one another. The magnitude of the sociopolitical unit varies: In rare cases, it is the conjugal family; more often, it is the extended family or lineage; frequently, it is the multifamily or multilineage community; and, in some areas, it is the multicommunity state, federation, or empire.

The pattern or structure of each unit varies not only with its size and composition but with its special cleavages, which may be based variously on kinship, sex, age, and status and on military, religious, and economic activities. The units are thus distinguished by such institutions as clans, lineages, and other kin groups, division of labor, secret societies, special associations, warrior classes, a priesthood, a nobility, and the like. Though every independent sociopolitical unit differed somewhat from all others in the way it patterned these institutions, certain broad configurations occurred over wide areas, and it is possible to group them in four principal types, as follows:

(1) The Marginal peoples had sociopolitical units which consisted either of a single kin group or of several loosely organized kin groups. Members of the unit were differentiated on the basis of age, sex, economic activities, and sometimes associations. Behavior was sanctioned by the informal and often unconscious influences of tribal custom operating through these institutions. These tribes had very similar crisis rites, shamanism, and magic, and their technology and material culture, though not homogeneous, was rudimentary and generally lacked the developed agriculture, building arts, and manufacturing processes found among other South American Indians. The sociopolitical patterns, however, varied with local conditions. Because the Marginal tribes lived in areas of limited resources and had elementary exploitative devices, the size and composition of their groups and many of their institutions had to be adapted to subsistence needs.

(2) The Tropical Forest and Southern Andean peoples also had sociopolitical units consisting principally of kin groups and structured

along lines of age, sex, and associations, but theirs differed from those of the Marginal tribes in that more developed exploitative devices, which included farming, and better transportation afforded by the canoe, permitted larger and more stable units. Social control was informal, except in a few communal activities such as warfare, which often had a special chief. They also had a richer technology and material culture, but their crisis rites and shamanistic patterns were of the same types as those of the Marginal tribes.

(3) The Sub-Andean and Circum-Caribbean peoples, though similar in technology and material culture to the Tropical Forest Tribes, had a more effective subsistence complex which supported a denser population and larger and more permanent villages. The villages were composed of many non-kin groups and were organized on the basis of classes rather than merely of age, sex, and associations. Warfare, carried on by the Marginal peoples mainly for revenge and by the Tropical Forest tribes for revenge and for personal prestige, became, among the Sub-Andean and Circum-Caribbean peoples, the principal means of achieving membership in the upper class, and war captives formed a slave class. Individual behavior was still largely sanctioned by custom, but governmental regulation through state law was foreshadowed by special and delimited powers accorded chiefs, warriors, and shamans in particular contexts and for delimited periods. Among the Tropical Forest and Marginal peoples, the shaman dealt principally with his own spirit helper, and his principal function was to cure and practice magic; among the Sub-Andean and Circum-Caribbean tribes, he served also as the priest in a temple-idol cult dedicated to the tribal gods, though his rites tended to be private oracular sessions rather than public ceremonies in a ritual calendar.

(4) The Central Andean peoples had the most developed agriculture in South America, the most dense population, and very efficient transportation, the combination of which permitted the growth of true urban centers and the extension of social interrelations and political controls over large areas. Patterns implicit in the Circum-Caribbean and Sub-Andean culture were fully developed in the Central Andes: a rigidly hereditary class system; war for conquest rather than for personal advancement through the capture of slaves; a temple cult with a hierarchy of gods and priests; public ceremonies forming a ritual cycle; and regimentation of a considerable portion of the lives of the commoners through political controls enforced by the state more than by the sanctions of tribal custom. These institutions overshadowed and to some degree replaced behavior patterns pertaining essentially to the kin group and the community. Central Andean material culture differs little technologically from other areas, except in

metallurgy and the building arts, but it is outstanding in the quantity, variety, and excellence of its products, and finer goods were produced by special craftsmen for the upper classes.

This fourfold classification has developmental implications in that some institutions and practices were necessarily antecedent to others, but it is not a unilinear scheme. As will be shown in a concluding section, a strong historical tradition carried certain sociopolitical institutions and probably several technologies throughout a considerable portion of South America, but the acceptance and patterning of such institutions was always contingent upon local potentialities. The potentialities were a function of the local ecology, that is, the interaction of environment, exploitative devices, and socioeconomic habits. In each case, the exigencies of making a living in a given environment with a specific set of devices and methods for obtaining, transporting, and preparing food and other essential goods set limits to the dispersal or grouping of the people and to the composition of settlements, and it strongly influenced many of their modes of behavior.

The *Yahgan*, for example, quite obviously had to live in small, widely spaced groups if they were to obtain sufficient shellfish in their coastal habitat. The *Ona* and *Tehuelche* could live in larger, nomadic hunting bands, and those of the *Tehuelche* undoubtedly grew in size after they obtained the horse. Probably as a function of the hunting economy, the bands were made up of patrilineal lineages. Along the rivers and coasts of the Amazon area, a more abundant subsistence and developed canoe travel permitted large population concentrations, and the settlement pattern and sociopolitical institutions had wider latitude for variation. The Circum-Caribbean area probably had still greater latitude, but it differed from the Tropical Forests because of the historical influences which brought it a class-structured society. The Andes had the most efficient subsistence pattern of all South America, and it developed over a long period within a strong historical tradition. The ultimate origin of its patterns has not yet been disclosed, but their influence on non-Andean peoples and their final formulation in the Central Andes by the *Inca* can be traced with some certainty.

In the following pages, population densities are related to community size. South American cultural data are then classified and summarized according to the four sociopolitical patterns. Under each, the subsistence activities and settlement patterns are described; the social, religious, and political institutions are analyzed; and the technology and material culture are briefly sketched. A concluding section traces basic trends in the development of South American cultures from the earliest known periods to the present day.

## POPULATION AND COMMUNITY SIZE

Population densities suggest potentialities for community development, but far greater insight into the actual setting of sociopolitical patterns is afforded if they are analyzed in relation to settlement types and community size (map 19).

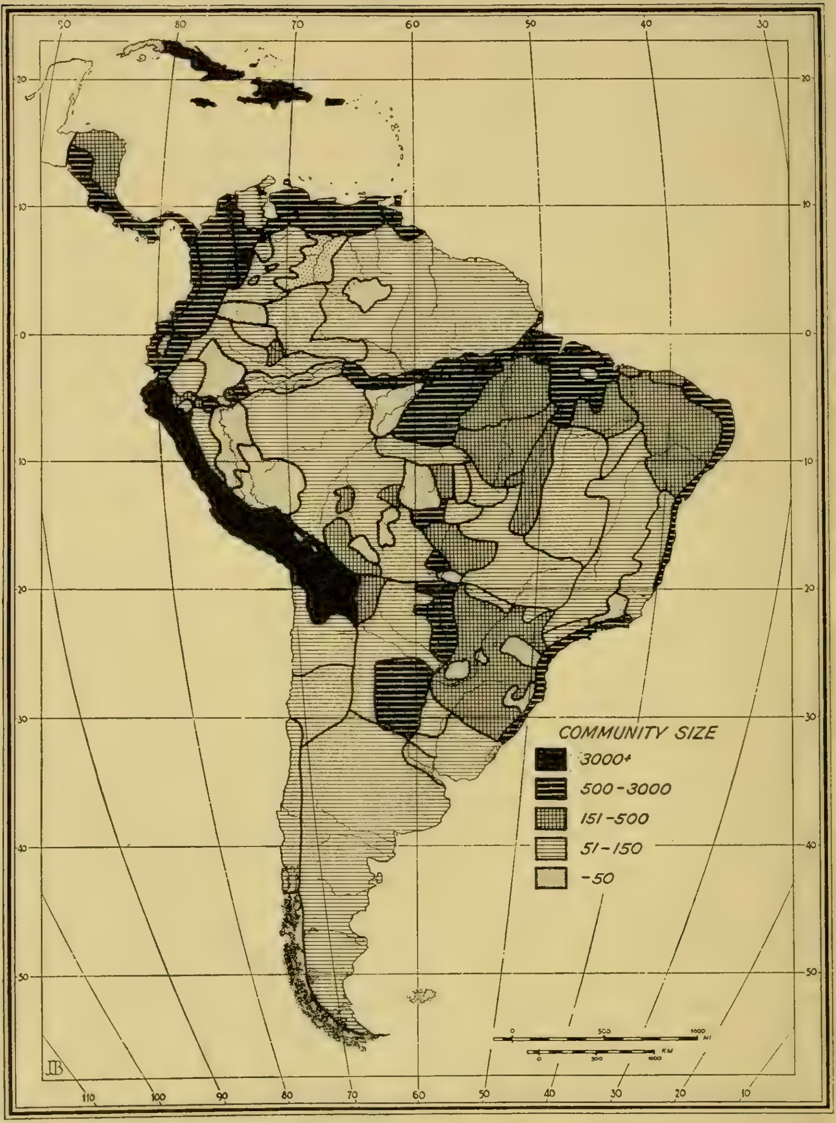
Population density and community size are by no means correlated, because the number of people who may live together in permanent association depends not only upon the number of persons per unit of area but on the quantity and distribution of resources, the transportational facilities, and the sociological factors, such as warfare and religion, that determine settlement patterns.

The Marginal tribes of Southern Argentina and Chile had a comparatively sparse population, ranging from 2.5 to 9 persons per 100 km.$^2$ In addition, their reliance on wild foods, which were widely scattered, and the necessity of transporting their goods and foods on their own backs (in some place they used bark canoes) precluded large, permanent settlements. Even where their population density equaled that of neighboring Tropical Forest tribes, their nomadism prevented community growth, for example among the *Nambicuara*, *Mura*, *Sirionó*, and Western Amazon Semi-Marginal tribes. (Cf. maps 16 and 19.)

A striking illustration of the importance of transportational facilities to community size is afforded by the tribes which adopted the horse after the Conquest. Among the peoples of Patagonia, the Pampas, and the Chaco, the bands increased several fold after the adoption of the horse.

Many of the Marginal tribes had groups consisting of only a single, conjugal family, that is, five or six persons, or slightly more if there were polygamy. Where a greater number of people remained in permanent association, they tended to form an extended family or lineage rather than a group of unrelated conjugal families. The limit of the lineage, however, was usually about 60 persons. When a community or band exceeded this number, they often lost a sense of being related to one another. Larger groups, therefore, generally consisted of several unrelated lineages, as among the somewhat agricultural tribes of the Chaco, who had communities of some 200 persons, and of eastern Brazil, where villages had 400 or more.

The agricultural tribes had permanent food resources near their villages, but farming did not have the same relationship to community size in each area. In the Tropical Forests, where the population density ranged from 10 to 50 persons per 100 km.$^2$, cultivation


COMMUNITY SIZE
3000+
500-3000
151-500
51-150
-50
0
500
1000
MI
KM
0
500
1000
JB

Map 19.—Size of native communities. The average size is given for each area.

was by the slash-and-burn method, and the fields, and in some cases the village, had to be moved periodically. The soil was tilled by women, who, having many household duties, could go only a limited distance to the fields. The Tropical Forest villages, which had as many as 1,000 persons among the riparian and littoral tribes, were supported more by the combination of water resources and transportation in efficient, dugout canoes than by farming. Conceivably, communities could have been larger had they been dispersed, but warfare kept them tightly nucleated; several large houses, each sheltering a lineage, were clustered inside a palisade. In some areas, however, as along the upper Amazon, houses were strung along the river without special grouping, though the population was comparatively dense (at least 30 persons per 100 km.$^2$).

In the Circum-Caribbean area, the denser population (several hundred persons per 100 km.$^2$) and the larger communities, which had 1,000 to 3,000 persons each, represent an intensification of the Tropical Forest ecology: somewhat better agriculture, abundant sea foods, and excellent canoe transportation. The large villages, however, were not solely the product of the numerous population. The villages tended to grow because they had become administrative and religious centers and because their population was augmented with captive slaves. The *Araucanians*, also good farmers and with a population density about equal to that of the Circum-Caribbean area, lacked these sociological factors which made for community growth. Instead of fewer and larger communities, they had numerous small ones, each constituting a lineage of 100 to 150 persons. Many other tribes similarly failed to achieve the community size which their ecology would have permitted.

In the Central Andes, the population, which had a density of 720 persons per 100 km.$^2$, was so concentrated in the fertile Coastal and Highland valleys that the settlement pattern was one of almost continuous dispersal over areas that were inhabitable. Instead of concentrating in fortified villages (the North Coast was probably an exception), refuge was sought in hilltop forts. Religious and administrative centers, however, provided nucleating points for communities of varying sizes. The ayllu village usually had several hundred inhabitants. The more important centers had several thousand people, and some communities were true cities, for example, Cuzco, which had some 100,000 persons. The basis for these urban communities was the combination of the dense population, which was supported by highly efficient agriculture, coastal transportation by sea-going balsa rafts and inland transportation by pack llamas traveling on roads, and the strong development of religious and administrative centers.

These general, comparative data on population densities and community size will serve as a background to the analyses of sociopolitical and cultural types which follow.

## THE MARGINAL TRIBES

The Marginal tribes were essentially hunters and gatherers, and they exploited comparatively unproductive environments by means of a simple technology. Their sociopolitical units were small, somewhat unstable, and frequently nomadic, and the relations of their members to one another were governed by kinship, age, sex, and associations. The size, permanency, and composition of their groups were strongly affected by subsistence patterns, each adapted to a distinctive environment, and by special local developments, such as clans, moieties, and associations. Sociopolitically, therefore, the Marginal peoples differed from one another as much as they differed from other South American Indians.

In terms of culture elements, the Marginal tribes were also extremely varied not only because many of the comparatively archaic features are unevenly distributed among them but because locally they borrowed many items from their Tropical Forest and Andean neighbors.

The following are some of the elements which certain Chaco tribes borrowed from the Andes: Loom weaving, painted cloth, tie dyeing, ceramic styles, dice games, some farming, use of salt and other condiments, fermented drinks, slings, feather fire fans, sandals, body paint applied with stamps, drums, flutes, whistles, eyed needles, some myth themes, and other minor items (Handbook, 1:210–211). From the Tropical Forest tribes they evidently took mortars, scalping, and use of tobacco; a few tribes also borrowed house types, hammocks, urucú, and arrow types.

The tribes of eastern Brazil acquired a considerable list of items from their Tropical Forest neighbors, and the *Northwest* and *Central Ge* might even be considered transitional between the Marginal and Tropical Forest tribes. These items include: Farming, large thatched houses, dugout canoes (*Carajá*, *Guató*), reburial and urn burial, hammocks (some *Ge*, *Cararí*, *Mashacalí*, *Carajá*), rubber balls (*Apinayé*, *Sherente*), various musical instruments, penis sheath (*Bororo*, *Cayapó*, *Camacán*, "*Tapuya*"), penis thread ("*Tapuya*," *Patashó*), featherwork (*Goytacá*, *Botocudo*, *Timbira*, *Central Ge*), earplugs, labrets, use of genipa and urucú as body paint, and others.

The *Charrua* and *Querandí* near the Paraná Delta adopted the taking of trophy heads from the Tropical Forest tribes and, doubtless under the influence of the neighboring *Tupian* peoples, they made canoes and thatched houses and wore ear, nose, and lip plugs.

Stripped of these borrowings, the Marginal cultures would be extremely simple. They would lack agriculture and domesticated animals. They would also lack loom weaving and probably fingerweaving or twining, though some of them would probably know netting techniques. They would have no basketry (the Fuegian coiled baskets are probably Andean-derived). They would lack pottery or make only a very crude ware. Their canoes would be only of bark and their houses one-family, conical, domed, or lean-to type shelters. They would prepare their food directly on the coals, in an earth-oven, or in water made to boil with hot stones, and they would eat it without salt or condiments. They would use no clothing, except skin robes in the colder areas, and they would lack ear, nose, and lip ornaments, adorning their bodies only with necklaces and paint. Their musical instruments would be limited to rhythm beaters, but probably excluding rattles as well as drums, and their only games would be shuttlecock and athletic contests. They would use no narcotics or stimulants.

### THE ECOLOGICAL BASIS

**Subsistence.**—The subsistence potentialities of the different Marginal groups are difficult to estimate quantitatively, but there is no doubt that food could be had only in limited amounts, so that the general population was extremely sparse. In addition, transportational facilities were so poor that, unable to assemble food and other goods at points of concentrated population, people had to disperse so as to be near their resources.

On the whole, the Marginal peoples inhabited plains or savannas and relied upon collecting wild seeds and fruits, hunting small game, and fishing. This required that they split into small groups, frequently of individual families, and move seasonally from place to place as different foods became available. The Patagonians and the *Ona* of Tierra del Fuego, however, were somewhat distinctive for the emphasis on large-game hunting (the rhea and guanaco), the yield of which supported cohesive bands of 50 or 60 people. The maritime peoples of the Chilean Archipelago, on the other hand, were essentially shellfish gatherers who lived scattered in small clusters along the seashore. Though the Marginal tribes generally avoided large streams, many *Guató*, *Mura*, and *Yahgan* virtually lived in canoes, each vessel carrying an encampment of a small, bilateral and independent family.

It would be incorrect to characterize all the Marginal tribes as nonfarmers. Although the peoples of southern Argentina and Chile lived south of the limits of any American Indian crops, many of the tribes farther north cultivated on a limited scale. It is more important that this farming was not very productive. Outside the

Andes, with its potatoes and cereal-crop staples, agriculture was based on tropical root crops, especially manioc and sweet potatoes. These require a rain forest environment, but the Marginal tribes generally occupied plains or savannas, and rarely had access to gallery forests where they could be grown.

Agriculture was wholly lacking in the Archipelago, and among the *Tehuelche*, *Puelche*, *Charrua*, *Purí-Coroado*, Guiana Marginals, and *Ciboney*. Of the Orinoco groups, only the *Yaruro* farmed a little. Agriculture occurred mainly among tribes of eastern Brazil, among some near the Paraná Delta, on a small scale in the more favored portions of the Chaco (*Zamuco*, *Tumerehã*, *Lengua*, *Ashluslay*, *Mataco*, *Kaskihá*, *Sanapaná*, *Pilagá*) and among the *Huarpe* and *Comechingón*, the last two showing Andean influence in their maize, beans, and quinoa, and llama herds. During the historic period, the *Caingang*, *Yaruro* and probably *Guayakí* abandoned farming, whereas the *Botocudo*, *Coroado*, and perhaps the *Poya* seem to have adopted it.

The main crop among most tribes was maize (it was the only *Huarpe* crop), but it was eaten green by the *Guayakí*, *Mashacalí*, *Malalí*, and *Yaruro*, presumably a practice of incipient farmers. The tropical root crops were grown only by some of the *Ge* tribes, who cultivated strips of gallery forest.

**Transportation.**—Transportational facilities are no less important than food resources in determining the ability of a population to group itself in sociopolitical units. They also delimit the quantities of material goods a nomadic people may possess. In aboriginal times, the Marginal tribes used either human carriers or canoes, though there was a doubtful case of dog packing in Patagonia. Perhaps the oldest device was the skin bag, which was used at the Contact Period in the far south. The netted bag and the carrying net—the former widely distributed north to México and the latter found in the Andes and north to western North America—were probably also old methods. These were used in the Chaco, and among the *Caingang*, *Botocudo*, *Mashacalí*, and *Yaruro*. The woven carrying basket of the Tropical Forests was adopted in eastern Brazil (*Northwest* and *Central Ge*, *Bororo*, and *Guayakí*), and by the *Guahibo*.

The canoe was of major importance to the Tropical Forest peoples, but among the Marginal tribes its use was limited and its construction primitive. Many Marginal tribes lacked canoes simply because they did not live on large streams. At the same time, they often purposely avoided large rivers because stronger, more aggressive, and definitely more aquatic-minded Tropical Forest peoples occupied them.

Canoes were absent among the *Tehuelche* and *Puelche* of the almost streamless Pampas, though in the Pampas and among some Chaco tribes the bullboat was occasionally used. Other tribes lacking canoes were the *Guayakí*, *Caingang*, *Bororo*, *Purí-Coroado*, *Tapirapé*, *Sirionó*, *Nambicuara*, Guiana Marginals, most of the *Northwest* and *Central Ge*, and many of the Chaco tribes. The *Bororo* and *Botocudo* adopted dugouts in the historic period.

Bark canoes were used by tribes living peripheral to the Amazon Basin on its headwaters, by the *Suya*, *Mura*, and upper Xingú tribes, and by the Archipelagic peoples. The last, however, adopted the dugout early in the historic period, and later the plank canoe. Dugouts were apparently native to the *Guató*, many of whom virtually lived in them, and to the *Guahibo* of the Orinoco, the *Carajá*, some of the Chaco tribes, and the *Charrua*. Under Andean influence, the *Huarpe* made reed balsas.

The importance of transportational facilities to the sociopolitical group is well illustrated by the *Tehuelche*, *Puelche*, and *Charrua*, who adopted the horse during the early historic period. Through increasing the yield of the hunt and facilitating the movement of foods to a central point and of peoples to the sources of food, it enabled the small, native bands of foot Indians to amalgamate into large, multilineage hunting bands. Comparably large bands elsewhere were only seasonal and temporary, as in the Chaco during harvests, or in the Archipelago when a whale was stranded.

**House types.**—The nomadic or seminomadic life and the small social units of these tribes precluded the use of large, permanent, frame, thatched houses of the Tropical Forest types. Some tribes lacked houses altogether (*Nambicuara*, *Guahibo*, *Ciboney*, *Guamo*, *Taparita*, *Gayón*); others made some kind of crude, temporary shelter (*Guaja*, *Sirionó*, *Mura*, *Yaruro*). Where construction is described, one of four types is indicated: (1) A domed pole hut covered with leaves, brush, or grass (Archipelago, *Mura*, *Botocudo*, *Patashó*, *Mashacalí*, *Macuní*, Chaco); (2) a conical, tipilike pole hut (*Yahgan*, *Guarañoca* in the Chaco); (3) a portable pole toldo covered with mats (*Charrua* and some Chaco tribes, especially the horsemen) or skins (Pampas, Patagonia, *Charrua*); (4) a single or double lean-to (*Ona*, *Guató*, *Purí-Coroado*, recent *Caingang*). The large, frame multifamily house is reported only among the *Bororo* and possibly the *Mashacalí*, and it was used by some *Northern Ge* as a clubhouse. The *Huarpe* and *Comechingón*, under Andean influence, made slight use of masonry houses and possibly of semisubterranean houses.

People slept on the ground, except among a few tribes which had borrowed the hammock from the Tropical forests (*Sirionó*, *Charrua*, *Apinayé*, *Eastern Timbira*, *Sherente*, *Purí-Coroado*, *Guahibo*, *Yaruro*, *Gayón*, *Mashacalí*, and a few upper Xingú and Guiana Marginal tribes) and some of the *Ge* who used a platform bed. The Pilcomayo and Bermejo River tribes of the Chaco used the hammock as a cradle.

## SOCIOPOLITICAL AND RELIGIOUS PATTERNS

Three principal sociopolitical types and several subtypes were found among the Marginal tribes. The principal types were: (1) Groups consisting of a single bilateral or conjugal family; (2) the unilateral band, consisting of a single, extended family, either matrilineal or patrilineal; and (3) the mixed band, consisting of several unrelated families, lineages, or clans. Where the group was composed of a single family or lineage, all its members were kin and it was, therefore, exogamous. This usually meant local as well as group exogamy. The relationship of the members to one another was based on kinship, and the headman was the family elder. Where the band was composed of several unrelated families, lineages, or clans, local exogamy was not necessary and social behavior and political controls extended beyond kinship relations.

**(1) Family units.**—The bilateral or conjugal family, consisting merely of father, mother (or mothers), and children, underlies all sociopolitical types. Among the *Guató*, *Mura*, and *Nambicuara*, it was the only permanent sociopolitical unit, and, though several families might associate with one another seasonally for special activities, they lacked permanent cohesion and had no leader or chief.

Comparatively little is known about these tribes. The *Guató* family was polygynous, and it lived in its own hut, or, during much of the year, its canoe. The *Guató* had a loose band organization in that several families occasionally foregathered for temporary association with one another, but the band had no political significance. Among the *Mura*, some two to five individual family houses sometimes were close enough to form a village, but each family retained its independence.

The population of these tribes was usually dispersed, so that there was little opportunity for social activities, but the *Mura* had puberty ceremonies, in which girls were isolated and boys were whipped, given parica snuff, and subjected to the ant ordeal. The elements of the boys' rite were borrowed from the neighboring Tropical Forest peoples. The *Nambicuara* evidently lacked a true secret cult, but in ceremonies to the thunder god they used sacred flageolets which were taboo to women and children. These tribes had little or no warfare by which individuals could win honors, but among the *Guató*, individual prestige was won by killing a jaguar.

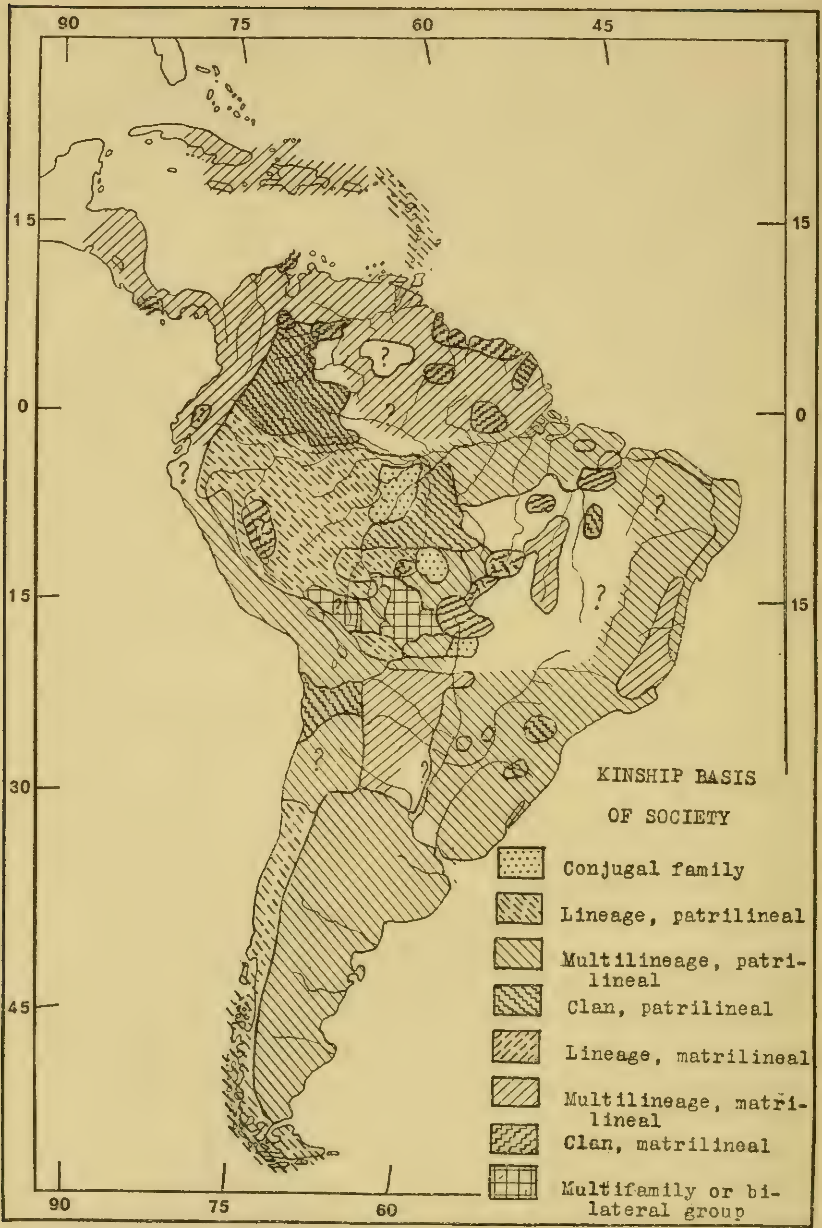
**(2) Unilineal bands.**—The unilineal band consisted of a single extended family or lineage, i. e., a man, his wife, and their descendants through either the male or female line. The band was patrilineal when postmarital residence was consistently partilocal, women going to their husband's family. In this case, it consisted of husband, wife, unmarried daughters, and married sons whose wives came from other bands. When the residence rule was matrilocal, the band was matrilineal and consisted of parents and their unmarried sons and married daughters whose husbands came from elsewhere. Extended families were also common in the Tropical Forest area, where, however, they were much larger than those of the Marginal peoples, often consisting of 100 or more persons occupying a large, communal house (map 20).

(*a*) *Patrilineal bands.*—Among the Archipelagic tribes—*Alacaluf*, *Chonó*, *Yahgan*, *Ona*, and *Haush* (Handbook, vol. 1)—there were various gradations from the independent conjugal family to the patrilineal band. Among the maritime *Alacaluf* and *Haush*, patrilocal families often lived alone, but among the *Chonó* and *Yahgan*, three or four related families stayed together in shifting villages. Each of these small sociopolitical units claimed a certain territory within which it traveled and which it defended against trespass. Warfare against trespass and in revenge for witchcraft strengthened group cohesion. Political control was synonymous with kinship control by the headman. The only divisions within the local group were those based on sex and age. The former included division of labor, the *Yahgan* secret society (which was probably related to that of the *Ona*), and the various girls' puberty rites. Age gradations were somewhat institutionalized through the initiation of pubescent boys and girls into the tribal society.

The *Ona* socioeconomic group, based on the collective hunting of land game, was larger than that of the Archipelagic peoples, ranging around 60 persons, but it, too, was based on kinship and consisted of about a dozen patrilineally related families. It had the characteristics of the typical patrilineal band (Steward, 1936), being patrilineal, patrilocal, exogamous, and land-owning. Thus, it resembled a localized sib. The lineage head was the headman of the band. The only formal sexual grouping was the secret tribal society to which boys were initiated at puberty. Girls were isolated at puberty. The function of warfare was about the same as among the Archipelagic tribes.

(*b*) *Matrilineal bands.*—The *Guayakí*, nomadic hunters and fishers, were grouped in bands of some 20 persons each (Handbook, 1: 441). The band had a strict rule of matrilocal residence and so must have tended strongly to consist of a single matrilineal lineage or extended family. There was no formal social differentiation within the band except by sex and age. Pubescent girls were scarified and observed meat taboos; boys had their lips perforated.

The *Sirionó* (Handbook, 3: 458) had extended matrilineal families that averaged perhaps 15 persons each. The entire extended family


90
75
60
45
15
0
15
30
45
90
75
60
?
KINSHIP BASIS OF SOCIETY
Conjugal family
Lineage, patrilineal
Multilineage, patrilineal
Clan, patrilineal
Lineage, matrilineal
Multilineage, matrilineal
Clan, matrilineal
Multifamily or bilateral group

MAP 20.—Distribution of the types of kinship basis of aboriginal sociopolitical groups.

traveled together and the constituent conjugal families often lived together in a single hut.

**(3) Mixed bands and villages.**—The mixed bands consisted of several unrelated families or lineages. They differed according to whether the component units were individual conjugal families, matrilineal lineages, or patrilineal lineages. Unless fixed by rigid rules of postmarital residence, these types intergraded and overlapped. Nevertheless, a tendency either to matrilocal or patrilocal residence was usually very strong, and most bands appear to have been aggregates of one or the other kind of lineage. In some cases, mixed bands were formed during the historic period, when new economic factors permitted previously independent lineages to band together in permanent association.

(*a*) *Mixed bands with a matrilineal base.*—The foot Indians of the Chaco—the *Mataco*, *Chorotí*, *Ashluslay*, *Macá*, *Lengua*, *Toba*, and *Lule-Vilela*—had land-owning bands of 50 to 200 persons. The recent *Ashluslay* villages of 1,000 are exceptionally large and may represent a post-Columbian condition. Though the smaller bands or villages may have consisted of a single lineage, most were made up of several extended families, which, being strongly matrilocal, must have been somewhat matrilineal. The band as a whole, however, was endogamous, except among the *Pilagá.*

The occurrence of matrilineal lineages mainly in the Chaco is probably to be explained by the relatively great importance of seed gathering, which placed women in a strong economic and, therefore, social position.

The band chief was usually an elder who attained leadership through personal influence. Some areas had a district chief, an office very possibly resulting in part, at least, from White influence. Hereditary chieftainship was uncommon.

A special bachelors' house or club was not a typical Chaco feature, but occurred among the *Pilagá* and *Ashluslay.* The *Chamacoco* initiated young men in a secret rite. The Chaco held public ceremonies at girl's puberty.

Warfare contributed to social cohesion among these tribes, but did not form the basis for a warrior class. Scalps were the only trophies.

The *Tapirapé* and *Carajá*, also had bilateral bands, each consisting of several extended, matrilineal families.

(*b*) *Mixed bands with a patrilineal base.*—The *Tehuelche*, *Puelche*, *Pehuenche*, and *Poya*, of the Pampas and Patagonia (Handbook, 1:127), and the *Huarpe* (1:169) and *Comechingón* (2:673) of western Argentina had mixed bands with a patrilineal base. The last two, though little known, had some Andean features (e. g., farming, llama raising, and stone construction) that placed them slightly above a

Marginal level, though sociopolitically they probably resembled their neighbors.

The aboriginal sociopolitical organization of these tribes is not known, but they were hunters rather than seed gatherers and, therefore, were probably predisposed to patrilineal families. Their ecology and social patterns very likely resembled those of the *Ona.* When first described in any detail, they already possessed the horse, which they obtained early in the 18th century from the Spaniards. The horse must have revolutionized their ecological adaptations through its usefulness both in hunting rheas and guanacos on the plains and as a means of transportation. The *Tehuelche*, *Puelche*, and probably the *Poya* and *Pehuenche* became organized in bands of 100 or more persons, which, unlike those of the Archipelagic tribes, consisted of several tolderías, or households, each comprising four to five patrilineally related families. A certain fluidity of band membership prevented a band from consisting only of relatives, and there was consequently no rule of band exogamy. Each *Tehuelche* band claimed hunting territories, but the boundaries appeared to have been somewhat flexible and to have depended on the band's ability to defend them.

Warfare was carried on mainly for revenge against witchcraft, murder, and trespass, as in the Archipelago, but a few captives were taken as drudge slaves. These slaves together with chiefs, who had some power though not hereditary status, marked incipient classes. The classes were far less developed, however, than among the horse tribes of the Chaco (*Abipón Mocoví*, *Caduveo*, and *Mbayá*, who may have had an oboriginal predisposition in this direction) or the *Goajiro* of Venezuela. The bands were essentially democratic, and the chief ruled and held a following by persuasion rather than through kinship ties, as in the Archipelago, or through hereditary status.

The Patagonian tribes may have had a men's secret society; otherwise, the main sexual differences were in division of labor.

In religion, the Patagonian and Pampean tribes were on the whole like those of the Archipelago, though group ceremonialism was manifest in the *Tehuelche* girls' puberty ceremony, in which a horse was sacrificed, and in the *Puelche* Elel ceremony, in which an evil spirit was impersonated.

The *Comechingón* (Handbook, 2: 673; Serrano, 1945, pp. 329–332), though Andean-influenced in having permanent settlements based on farming and llama raising, were somewhat Marginal in that each settlement evidently consisted of a patrilineal lineage occupying 10 to 40 houses. New lineages budded off, but what were evidently groups of related lineages formed "ayllus," or larger kinship groups, each owning its land and having a hereditary chief. A horse period is not recorded for the *Comechingón.*

The *Huarpe* had patrilineal, probably extended families, each with its own farm lands and chief. Men had a special drinking house.

The *Querandí* (Handbook, 1: 180), *Charrua*, and some of their neighbors of Uruguay (1:191) probably resemble the tribes of Patagonia and the Pampas in sociopolitical type, but differed from them in possessing certain social traits borrowed from the *Tupian* tribes of the Paraná Delta and certain religious traits—finger mutilations, placing skewers in the flesh, and vision seeking—that are unique in South America and resemble those of the Plains Indians of North America.

These tribes became horsemen, organized in hunting bands. The *Charrua* band consisted of 40 to 60 persons under a weak chief. Each toldería, or household, consisted of a single family, but the family composition is not known. Tropical Forest traits, some of them probably of *Tupian* origin, are: war captives killed at their master's death (*Charrua*, *Querandí*), skull trophies (*Charrua*, *Querandí*), and distinctive dress and hammock for the chief (*Yaro*). These suggest incipient class structure, which, however, cannot have been well developed in groups so small.

The *Guahibo* band, averaging 30 members, may have been unilineal, but data on its composition are not available.

(*c*) *Mixed bands with exogamous clans and moieties.*—Sibs or clans and exogamous moieties, which are really pairs of sibs, differ from lineages or extended families in that their membership is based on the fiction of common descent, through either the male or female line, even though the descent cannot actually be traced, whereas lineages consist only of true relatives. In addition, a particular clan or moiety is typically distributed over several places and is, therefore, exogamous by group rather than by locality, whereas a lineage occurs only in one place and is exogamous by locality. A lineage could become an exogamous sib or moiety if such features as origin myths and totemism reinforced the sense of kinship of its members after their genealogical connection had become untraceable and if it continued to be exogamous without regard to where the members lived.

We do not here attempt a theory of sib origin, but it should be pointed out that the difference between the two is not great and that the lineage or unilineal band organization is very widespread among the Marginal tribes. It is patrilineal among the Southern Hunters, matrilineal among the seed gatherers of the Chaco, and among many farmers. If two lineages were brought together in a single group or community and continued to be exogamous, they would constitute moieties, and if three or more were brought together and continued to be exogamous they would constitute sibs. A change in subsistence, for example from hunting and gathering to farming, might permit the formation of such multilineage groups, and there is perhaps some significance in the occurrence of clans and moieties mainly in eastern Brazil, where many of the tribes practiced considerable farming and where villages were unusually large for Marginal tribes (the *Apinayé* villages, for example, had 500 to 1,400 persons). Once the pattern of sibs and moieties had been established it could readily spread among neighboring tribes, and a tendency might develop to form nonexogamous tribal or community divisions copied from the exogamous ones (amp 20, p. 684).

Whatever the origin of sibs, moieties, and various associations in eastern Brazil, it is of interest that these sociological refinements developed mainly in the patterns of the Marginal tribes. There was no tendency whatever toward a class system.

Exogamous matrilineal moieties occurred among the *Pau d'Arco*, *Canella*, *Bororo* (each subdivided into sibs), and *Yaruro*. Exogamous patrilineal moieties occurred among the *Sherente*, where each was subdivided into sibs, and among the *Caingang*, where each was subdivided into two groups with reciprocal functions in mortuary ceremonies and where there were also some kind of preferential marriage classes. In spite of their patrilineal moieties, the *Caingang* practiced matrilocal residence.

Exogamous patrilineal sibs and matrilineal sibs were found among various upper Xingú tribes. Possibly the former had some connection with the patrilineal sibs of the neighboring *Tupian* tribes of the Tapajóz-Madeira region.

Eastern Brazil had a considerable proliferation of moieties in addition to those which regulated marriage and of age classes and other groupings. The *Canella* were divided into exogamous matrilineal moieties, three sets of nonexogamous moieties based respectively on divisions of nature, personal names, and sports groups, and four age classes. The *Sherente* had not only patrilineal exogamous moieties with four sibs in each, but seven grades in the bachelor's hut and four other men's associations. The *Apinayé* had four exogamous marriage classes and also nonexogamous matrilineal moieties. The *Tapirapé*, *Tenetehara*, and *Carajá*, though lacking exogamous marriage groups, had nonexogamous ceremonial moieties.

A striking feature of eastern Brazil which links some of the tribes with the Tropical Forest rather than Marginal peoples is a men's club house: *Sherente*, *Northern Cayapó*, *Pau d'Arco*, *Bororo*.

**(4) Sociopolitical units of uncertain composition.**—The *Botocudo* bands of 50 to 200 persons consisted of several extended and polygynous families, but descent is not stated. The shaman was band chief.

*Purí-Coroado* bands had up to 40 persons. Some were single lineages, and thus of the unilineal band type, and others consisted of two lineages, but the type of descent is not known. The family elder was the chief. Warfare was carried on, and skull and flute trophies were taken.

The *Mashacalí* may at one time have had communal houses, perhaps implying lineages. Unusual social features were the warriors' council and the men's house, which served as the center of a cult of the dead and was taboo to women and uninitiated children. The souls of the deceased were supposed to appear from the sky during ceremonies in which the bull-roarer and masks were used.

Information on the Guiana Marginals, most of the Orinoco Marginals, and on the *Ciboney* of the Antilles permits no appraisal of their sociopolitical structure. The same is true of the *Guaharibo*, beyond the fact that they had bands of about 40 persons.

**Warfare.**—Warfare among the Marginal tribes was rudimentary and contributed to group cohesion rather than to individual status. It was virtually never aggressive and was defensive only where the Marginals adjoined predatory tribes or where trespass on hunting and gathering territories was involved, as in Patagonia, the Chilean Archipelago, and some of the Chaco. The most frequent cause of warfare was revenge for witchcraft against a group member. Typically, it was unorganized, there was no cannibalism, except perhaps among the *Botocudo*, and the taking of trophies or captives was rare. The *Coroado*, *Charrua*, *Querandí*, and neighbors took trophy heads; the Chaco scalped. Exceptional military practices have been mentioned under Sociopolitical Patterns.

**Religion.**—Religion characteristically gave great prominence to shamanism and magic, and it served individual rather than group objectives. The Marginal tribes lacked a cult religion, a priesthood, and group ceremonies, except those mentioned above in connection with initiation rites, and certain Chaco religious feasts and rites to control sickness and weather. The concepts of the supernatural, the specific practices and beliefs concerning witchcraft, magic, and omens, and the ritual elements varied greatly from tribe to tribe.

*Religious concepts.*—The Marginal tribes fall into three groups, according to the supernatural beings to which they attached greatest importance.

(1) Belief in a High God prevailed among the Patagonian, Pampean, and Archipelagic tribes, but the god is known to have been an object of prayer only among the last group. There is no proof that belief in a High God was ever universal in America. To the plains tribes, lesser spirits, especially evil ones, were of greater importance in daily life than the High God. The *Huarpe* also worshiped celestial beings and hills.

(2) Among the *Nambicuara*, upper Xingú tribes, and the *Northern*

*Ge*, the mythological creator was a celestial being, usually the Sun or Moon. The *Northern Ge* had true celestial deities, and the *Nambicuara* held a ceremony to the thunder god, but in both tribes and among the *Sirionó* and *Caingang* spirits, especially of nature, were more concerned with the affairs of men.

(3) The *Bororo* and eastern Brazilian tribes attached great religious importance to ghosts or souls of the dead. The *Bororo* and *Mashacalí* impersonated their ancestors in a cult, and the *Caingang* believed that their ancestors, though invisible, attended ceremonies. In the *Canella* boys' initiation, the spirits of the dead entered the neophytes' bodies.

*Shamanism.*—Shamanism is a near-universal feature of primitive cultures and it is certainly very ancient, but it was absent among some Marginal tribes and very undeveloped among others. Often, both shamanistic and lay curing of disease was connected with ghosts or ancestors.

The *Sirionó* and *Canella* lacked shamans. Among the former, illness was cured by anyone using the bones of the dead, and among the *Canella* by direct appeal to one's deceased kin for aid. Shamans were rare among the *Bacaïri.* The *Caingang* shaman merely consulted spirits; a sick person was cured by his own relatives. Among the *Carajá*, the shaman only mediated between the living and ghosts; among the *Purí-Coroado*, they conjured up souls of the dead to ask them questions; and among the *Botocudo*, they conjured sky spirits to a post in the village. These conjuring functions seem to foreshadow the oracular duties of the Circum-Caribbean shaman, but among the Marginal peoples they were exceptional and did not involve a well-formulated tribal cult and deity.

The cases just cited seem to have lacked the concept of the shaman's spirit helper, but the concept was evidently present elsewhere, though the nature of the spirit and the manner in which the shaman obtained it are seldom clearly described. The Archipelagic shaman acquired his spirit helper, often a deceased shaman, in a dream. The *Bororo* shaman's helper was also the soul of a dead shaman; among the *Yahgan*, it was a dwarf or female spirit. In the Chaco, the nature of spirit helper varied.

Shamans performed various services, including prognostication, officiating at a few public rites, finding lost objects, and weather making, but their most important task was to cure illness. Regardless of concepts of their supernatural power, they cured diseases everywhere by blowing, massaging, and sucking out a foreign object believed to have lodged in the body. The only exception is that among some Archipelagic tribes and the *Caingang*, *Sherente*, *Apinayé*, *Northern*

*Cayapó*, and *Botocudo* shamans recovered a patient's soul, the loss of which was believed to cause the sickness.

The concept that any individual may have a supernatural guardian spirit was doubtless more widespread than recorded. It is attributed only to some of the Archipelagic tribes and to the *Caingang* and *Charrua; Charrua* men fasted and scarified themselves to obtain it.

*Ritual elements.*—A number of ritual elements occur in various religious contexts. Scarification or blood letting, often about the same thing, was very widespread: *Charrua*, *Chaco*, *Purí-Coroado* (who used the venisection bow), *Northern Cayapó*, "*Tapuya*," *Botocudo*, and *Southern Cayapó*. Other elements are of very limited distribution and occur also among some of the more Marginal peoples of North America: the drink tube (Archipelagic shamans, *Yahgan* initiation rites); bull-roarer (*Mashacalí*); scratching stick (*Yahgan* initiations); cutting off a finger joint (*Charrua*, *Minuané*, and neighbors); running a wooden skewer under the skin (*Charrua*, *Minuané*, and neighbors); steam bath for curing (*Purí-Coroado*, *Botocudo*); sacrifices (*Ona; Tehuelche*, of horses; *Huarpe*, of chicha and maize); and blowing tobacco to the four directions (*Tehuelche*, historic ?). The ant ordeal (*Mura*), flagellation (*Puelche*, *Botocudo*, *Mura*), and taking parica snuff (*Mura*) were probably borrowed from the Tropical Forest tribes.

**Disposal of the dead.**—In contrast to the tribes with a class structure, the Marginal tribes disposed of all their deceased in the same manner. Simple earth burial was the usual method, but the *Yahgan*, the *Guaharibo*, the *Aweicoma Caingang*, and sometimes the *Toba* cremated (the *Guaharibo* preserved the ashes); the *Purí-Coroado* practiced urn burial, a Tropical Forest trait; the *Charrua*, *Chaná*, *Bororo*, *Camacá*, some *Northern Ge*, and *Mataco* gave reburial (the *Mataco*, after tree burial); and the *Caingang* (*Guayaná*), mound burial. The "*Tapuya*" were accredited with endocannibalism. The *Bororo* and *Caingang* held mortuary festivals.

### TECHNOLOGY AND MATERIAL CULTURE

All Marginal tribes had a primitive technology which, in both positive and negative traits, represented a very early—certainly a prehorticultural—American cultural level. More advanced technologies were absent to a surprising degree, even among the tribes who adjoined or formed enclaves within the Tropical Forest peoples and would seem to have had considerable opportunity for borrowing. Some primitive features were contingent upon a nomadic life, e. g., small temporary shelters and the restricted number and size of material objects. Others reflected the environment, e. g., the lack of canoes in areas without large streams or the absence of agriculture in the far south. And a few primitive features persisted where tribes, such as those of Tierra del Fuego, were too remote from the sources of more advanced things. Many primitive survivals, however, seem to represent a sheer cultural inertia with respect to certain practical aspects of life, even where it would have facilitated daily affairs to have borrowed new processes. For example, simple woven and twilled baskets are easier and faster to make than coiled or twined ones, loom weaving is more efficient than netting or finger twining, and in many localities even dugout canoes would have repaid the labor of constructing them. It is as if these tribes had not yet reached the threshhold of paying serious attention to material security; they exhibited a certain recklessness toward the hazards of existence and the food scarcity that kept their population at a low density.

On the other hand, the Marginal tribes laid considerable stress on the more recreational aspects of life. Among the tribes in contact with Tropical Forest or Andean peoples, personal adornment was richly developed among certain groups, musical instruments were present in considerable number, and most tribes had a fairly large number of dances, songs, and games.

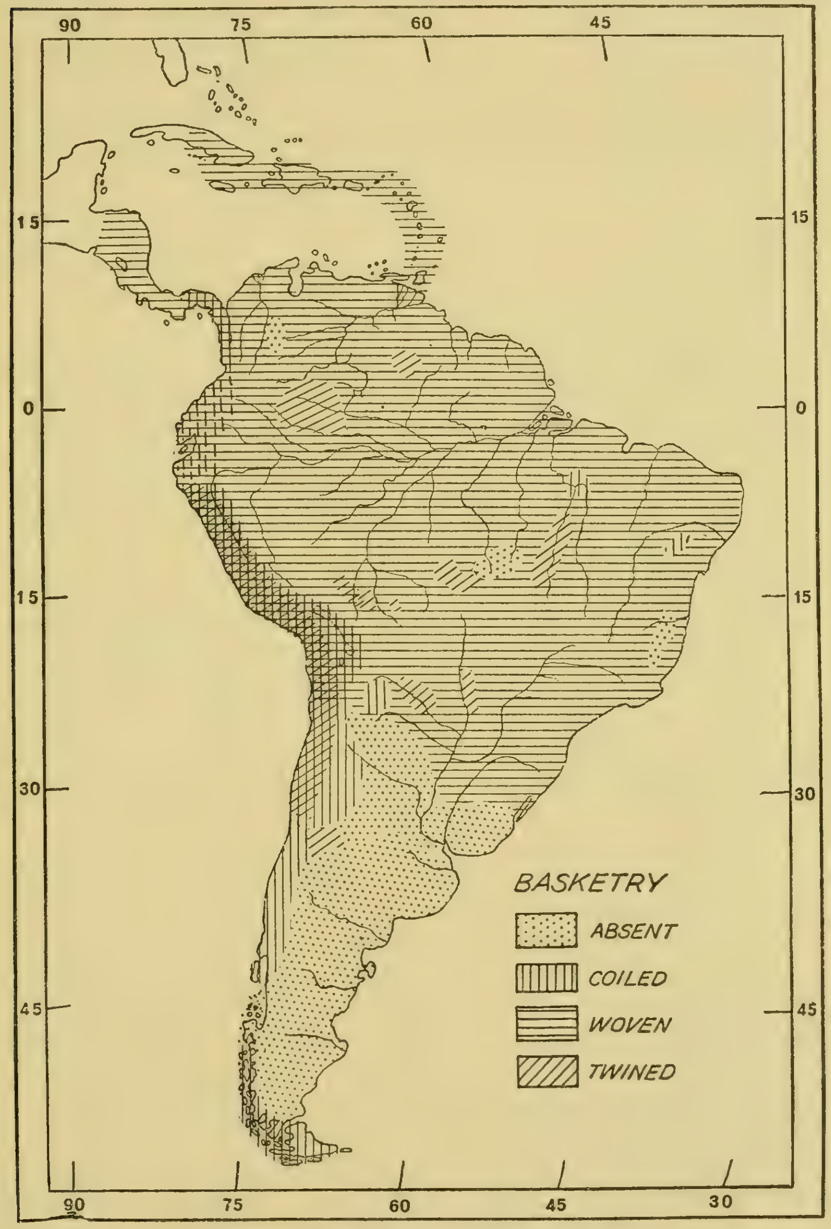
**Fishing devices.**—Hunting weapons are mentioned below (p. 695). Fishing was apparently done by all tribes with nets, harpoons, and spears, and by all but those of the Archipelago with the bow. Fishhooks and fish drugs, though occurring sporadically, are not characteristic of the Marginal peoples.

**Food preparation.**—The Marginal tribes are distinctive even in their methods of preparing food. A striking feature is their failure to use salt; it is reported only among the *Tehuelche* and certain Chaco tribes, who obtained it from the Andes. Even the *Purí-Coroado*, who had pepper, used no salt.

The tribes without pottery (see below) had no cooking containers and consequently broiled or roasted their food. The babracot, or grill, so characteristic of the Tropical Forest tribes, was found only among the *Caingang*, and the *Mashacalí*, and some of the latter's neighbors. Other tribes placed food directly on the fire, but some used the earth oven, evidently an old, prepottery trait (the Chaco, *Caingang*, *Ge*, *Purí-Coroada*, *Botocudo*, and some Orinoco Marginals). Stone boiling, which, like the earth oven, has North American parallels, is reported for the *Northwestern Ge.*

**Pottery.**—Pottery was absent among the Archipelagic tribes and the *Ciboney*, and it apparently reached the *Tehuelche* only recently, perhaps in the historic period. (See map 3.) Its aboriginal presence among the *Northwest* and *Central Ge*, eastern *Nambicuara*, upper Xingú, *Pirahá*, *Mura*, and *Botocudo* is doubtful; even if made by these tribes, it cannot have been of great importance. The remaining tribes were unquestionably potters, but their ware was plain, incised, stick-impressed, or cord-marked. Painted ceramics are accredited to only the *Huarpe* and the western Chaco, who borrowed it from the Andes, and perhaps the *Guaharibo*, to whom a "beautiful" ware is attributed.

**Basketry.**—Basketry (map 21) had a limited distribution and was


90
75
60
45
30
15
0
15
30
45
BASKETRY
ABSENT
COILED
WOVEN
TWINED

Map 21.—Distribution of basket weaves.

probably introduced comparatively late among these tribes. It was absent among the *Puelche* and *Tehuelche*, who used skin and wooden containers, the *Charrua* and most Chaco tribes, who used pots, and the *Botocudo* and *Camacán*.

Coiling would seem to be a fairly old technique, to judge by its occurrence among living tribes at the northern and southern extremes of the hemisphere and its spotty archeological and ethnographic distribution between, but in South America it is the characteristic Andean technique and it has a very restricted distribution elsewhere (map 21). In the Central Andes, it appears to be later than twined basketry; in Northern Chile, coiling is older than twining. Coiling was used by the Archipelagic tribes, the *Comechingón*, the *Pancararú*, some of the *Northwestern* and *Central Ge*, and possibly the Chaco (*Mataco*). Twining, which has a more restricted hemisphere distribution, is reported from Patagonia, the *Huarpe*, the *Carajá*, and the *Shirianá*. Several Chaco tribes used it for mat making.

Baskets and often mats and fans were woven of a single palm frond. These, evidently a primitive form of true woven and twilled baskets, are accredited to the *Mura*, *Guató*, and *Sirionó*. Twilled and woven baskets, borrowed from the Tropical Forests, occurred mainly in eastern Brazil (*Guayakí*, *Caingang*, *Purí-Coroado*, *Northwestern* and *Central Ge*, *Carajá*, *Tapirapé*), and among the *Yaruro*, *Guató*, *Bororo*, *Bacaïri*, and *Cainguá*.

**Fabrics.**—Fabrics were finger-made, either netted or twined, rather than loom-woven. Thread was made of wild bast; cotton was grown only by some of the *Ge* and the *Mashacalí*. Fish nets were made by many of the tribes, and were the only Archipelagic textile product. The Chaco, *Carajá*, *Caingang*, *Patashó*, and *Mashacalí* made netted bags, and the *Charrua*, the Orinoco Marginals, and perhaps the *Mashacalí*, netted hammocks. The *Botocudo*, *Guayakí*, *Bororo*, *Yaruro*, and *Camacán* used also netting for various objects.

Twining was perhaps more common than is known, for textile techniques are seldom described. It is accredited to the Chaco, *Guató*, *Sirionó*, and possibly some of the eastern Brazilian peoples.

Several tribes had adopted the true loom, but, as most Marginal peoples either went nude, or wore skin garments, textiles were limited to woven bands and a few skirts, and loom weaving was a minor craft. The loom and true weaving were probably pre-Columbian among the *Huarpe*, *Caingang*, *Northern Cayapó*, *Camacán*, the *Arawakans* of the upper Xingú, the *Nambicuara*, *Tapirapé*, *Chono*, and *Sirionó*. The *Tehuelche* seemingly adopted it from the *Araucanians* in the historic period. Some western Chaco tribes had learned weaving with cotton or wild bast from the Andes in prehistoric times, but they intensified the craft after receiving sheep.

**Weapons.**—The Marginal peoples differed from the Tropical Forest tribes in their almost complete lack of the blowgun and in the use among the southern tribes of the bolas and sling, though both groups had bows. Some differences in weapons reflected the environment: blowguns were used in the jungle, not in the more open plains; slings and bolas are plains weapons; arrowpoints were of stone in the plains of the south (*Charrua* to Tierra del Fuego), of wood farther north. But there are nonenvironmental differences: virtually no Marginal tribes used arrow poison (only the *Guahibo* and possibly *Puelche*); their arrows did not have the Tropical Forest variety of specialized points; and clubs were absent among the *Charrua* and Patagonians.

The bow, though found throughout the hemisphere, is late in the Fuegian sequence and it may have spread rapidly at the expense of other weapons, particularly the dart and spear thrower. Outside the Andes, the spear thrower had a sporadic occurrence, representing local survivals. Among the Marginal tribes, it was limited to tribes near the Paraná Delta (*Chaná,* and possibly the *Querandí*), and to the upper Xingú and *Carajá.* The pellet bow, more of a toy and probably of European origin, occurred in the Chaco and among some eastern Brazilian tribes.

A spear or lance was general. Among the horsemen (*Tehuelche*, *Puelche*, *Charrua*, and some Chaco tribes) it was developed to extreme length and became a major weapon, even at the expense of the bow.

The bolas is fairly old in the Fuegian shell mounds, though at the Conquest it extended from the Chaco south only to the Río de la Plata. With the horse, it spread farther south.

Clubs occurred from eastern Brazil to the Chaco, but were not characteristic of the Southern Hunters.

The sling, a characteristic Andean trait, occurred in the Archipelago, among the *Charrua*, and as a toy in the Chaco, but was absent among other Marginal tribes, except the *Ciboney* of the Antilles.

Defensive devices are obviously late acquisitions from the Andean peoples. The *Tehuelche* and *Puelche* used skin-tunic armor and a helmet; the Chaco, a woven shirt or hide armor.

**Dress and adornment.**—Except in Patagonia, Tierra del Fuego, and among some Chaco tribes, where fur and skin cloaks provided protection during cold winters, the body was adorned rather than clothed. Adornment included painting, featherwork, ear, nose, and lip ornaments, coiffure, headdress, necklaces, arm and leg bands, and tattoo. Ear, nose, and lip ornaments were absent among the Archipelagic peoples, and, therefore, are probably not among the oldest South American culture traits. Elsewhere, these and other ornaments occurred in such variety that their types, distribution, and history require special study. For the present purpose, it is of greatest interest to observe that when these items were not purely ornamental, they served to distinguish tribes, sexes, societies, or other associations rather than to indicate social status. Chieftains' insignia were rare, and class insignia were probably unknown.

### RECREATIONAL ACTIVITIES

**Musical instruments.**—The Marginal peoples once lacked any musical instruments, except perhaps a stick to beat time, the only instrument accredited to the Archipelagic peoples at the Conquest. No instruments are reported for the *Charrua*. A rhythm beater in the form of a bamboo stamping tube became characteristic of the *Bororo*, *Ge*, and other tribes of eastern Brazil, and rattles, often of bark but of gourd where there was some farming, were widely distributed, except in the Archipelago. The Chaco evidently had only the rattle at one time, but it borrowed a considerable number of other instruments, especially wind instruments, from the Andes. Similarly, eastern Brazil borrowed trumpets, panpipes, flutes, and other instruments from the Tropical Forests. From the same source, the *Guahibo* acquired rattles, flutes, and panpipes.

**Intoxicating beverages.**—Chicha, a fermented alcoholic drink made of various cultivated plants or wild fruits, was not originally part of the Marginal culture. At the Conquest it was unknown to the Archipelagic and plains tribes, except the *Puelche* and *Huarpe*. Its principal occurrence was eastern Brazil: *Caingang*, *Ge*, *Tenetehara*, *Nambicuara*, upper Xingú tribes, *Mura*, *Tapirapé*, *Carajá*, probably the *Purí-Coroado*, and other Marginals near the Brazilian coast. Here, it was certainly borrowed from the Tropical Forests. It was also made by the Orinoco River Marginals. The Chaco made chicha of wild fruits, and the *Guató* and *Bororo* are accredited with a palm wine.

**Games.**—Games had a limited occurrence. Of special interest are the *Ge* log races and the dice games (Andean), hockey, bull-roarer, stilts, "snow-snake," and shuttlecock found among many of the tribes, especially in the Chaco. (See p. 503.)

**Tobacco and other narcotics.**—Tobacco was comparatively recent among the Marginals. It is reported only for the *Bororo*, who smoked cigars; the Chaco Indians, who chewed it or smoked it in elbow and tubular pipes; and the *Coroado* and southern Amazon Marginals, who usually smoked it in a pipe (map 9). Pipes have been found archeologically in the Pampas, Patagonia, and *Caingang* territory, but none of these tribes used tobacco in historic times.

Other narcotics are equally rare among the Marginals. The Chaco used a narcotic snuff, the *Mashacalí* a vision-producing grub, the *Mura* and *Guahibo* parica snuff, and the *Pancararú* a vision-producing drink, all borrowed from Tropical Forest neighbors.

## THE TROPICAL FOREST AND SOUTHERN ANDEAN TRIBES

The Tropical Forest and southern Andean peoples differed from the Circum-Caribbean and Central Andean tribes and resembled the Marginal peoples in having sociopolitical groups which were based on kinship and lacked classes. Their groups, however, were characteristically large, semipermanent villages, whereas the Marginal groups were small and more or less nomadic. But each village was independent; there were no federations or empires, and, political units that transcended the community were exceptional.

Both the Tropical Forest and Southern Andean peoples had loom-woven textiles, fairly commodious houses, developed basketry, dugout canoes or balsa rafts, and other material traits and technologies that were characteristically absent or little developed among the Marginal tribes. On the basis of the specific forms of these features and of certain environmental adaptations, however, the Tropical Forest peoples must be distinguished from those of the southern Andes. The former, occupying the tropical rain forests of the Guianas, the Amazon, eastern Brazil, the coast south to the Paraná Delta, and the Paraguay River, were linked with the Circum-Caribbean area. They had tropical root crops, frame-and-thatched houses, dugout canoes, twilled and woven basketry, and the same general tradition of ceramics. The southern Andean peoples were linked with the central Andes in that they had potatoes, cereal crops, and agricultural techniques adapted to deserts and semideserts, coiled baskets, some stone houses, balsa rafts, metallurgy, llama breeding, Andean type clothing, and many minor items derived from Perú and Bolivia.

Thus, two streams of historical influence are evident in the material culture and technology of these tribes: one carrying central Andean traits southward, especially after the *Inca* conquest, to Chile and Northwest Argentina, and representing desert and Highland adaptations; the other, carrying Circum-Caribbean traits down the Atlantic Coast and up great rivers, and representing coastal, riparian, and rain forest adaptations. In the Chaco, the farming *Arawakan Chané* (*Chaná* and *Guaná*) in the north, and the natively riparian and later equestrian *Abipón*, *Mocoví*, and perhaps *Payagua* and *Mbayá* of the south and east were evidently influenced by both streams, and it is possible that considerable Tropical Forest influence even reached the *Araucanians* of Chile.

Because of the great difference in the element content of their cultures, the Tropical Forest and the southern Andean tribes are treated separately. Their sociopolitical patterns, however, were of the same general type, though the latter approached sub-Andean types.

### THE TROPICAL FOREST TRIBES

The Tropical Forest culture, though comparatively uniform, had several subtypes. As volume 3 of the Handbook carried a description of the general culture (pp. 886–895) and of the subtypes (pp. 896–899), the Tropical Forests will be accorded less detail than was given the Marginal groups.

Some of the subtypes, especially those of the western and southern Amazon, represented gradations between the Tropical Forest and Marginal cultures and they are classed as semi-Marginal (map 18). Particularly, they lacked certain characteristic material and technological elements of the former and they had several distinctive social and political features.

#### THE ECOLOGICAL BASIS

The Tropical Forest tribes had a fairly adequate subsistence, but it was by no means based entirely on farming. These peoples were riparian and maritime, and water resources were no less important to them than crops. In fact, population density was greatest on the coasts and rivers.

After receiving the horse, the riparian *Abipón*, *Mbayá*, and *Mocoví* gave up what farming they had practiced to become looters or overlords of farming tribes (Handbook, 1:250). The *Goajiro* turned from farming to cattle raising.

Farming was by slash-and-burn in the rain forests, a method requiring periodic shifting of the fields if not of the village. The most important crop was bitter manioc (prepared with the tipití or manioc squeezer) which, however, was little grown in eastern Bolivia and farther south. Also staples were: sweet manioc; sweetpotatoes (*Ipomoea batatas*); a species of yam (*Dioscorea*); *Xanthosoma*, the New World equivalent of taro; arrowroot (*Maranta arundinacea*); maize, often in many varieties; pepper (*Capsicum*); beans and squash. The Tropical Forest people also cultivated various palms, gourds (*Lagenaria vulgaris*), calabashes (*Crescentia cujete*), such dyes as bixa (*Bixa orellana*) and genipa (*Genipa americana*), cotton, tobacco (*Nicotiana tabacum*), and in various localities, arrow reeds, cane, palms, and other special plants. Although some opinion tends to place the original home of maize and perhaps other crops in eastern Bolivia or Mato Grosso, the Tropical Forests cannot definitely claim the first domestication of any but the tropical root crops, which are distinctive of them.

The Tropical Forest peoples characteristically lived along the coasts and rivers, and they were skilled boatmen and fishermen. The most common craft was the dugout canoe, but the *Island Carib*, expert ocean navigators, used planked canoes; some of the tribes on the smaller tributaries of the great rivers, however, made only bark canoes, and the eastern Chaco had bullboats. Fish, a major food resource, were taken with drugs (p. 277), baskets, nets, weirs, multiprong and harpoon arrows, and, frequently, hooks. Important foods along the Amazon and its main tributaries were turtles, turtle eggs, and large water mammals (especially manatee (*Trichechus inunguis*) and river dolphins), the last taken with harpoons. On the coast, fish and shellfish were eaten.

Land resources were also exploited. Wild plants (see Lévi-Strauss, Handbook, vol. 6) were collected with the aid of a great variety of baskets and, in many localities, the climbing ring (a loop held between the feet and placed against a tree trunk to aid climbing). Game was taken in various kinds of traps (p. 265) or it was killed with the spear, the bow, a great variety of special types of arrows (p. 229), and, in the western portion of the area, the blowgun (map 4). Most of these tribes kept Muscovy ducks.

These food resources not only supported a population that was much denser than among the Marginal peoples, but, combined with the transportational advantages of the canoe, they permitted people to live together in larger and more permanent communities. Whereas the Marginal band usually had 10 to 60 persons, the Tropical Forest village consisted of hundreds and even 1,000 or more people welded into a more or less cohesive unit. The village, moreover, could remain in one place several years, but it was rarely permanent. Soil exhaustion periodically required that it be moved to the site of a new plantation, and many tribes customarily destroyed the village at the death of one of its inhabitants (p. 354).

### SOCIOPOLITICAL AND RELIGIOUS PATTERNS

The Tropical Forest village, like the Marginal band, usually consisted of an extended family or lineage, i. e., several generations of families related through either the male or the female line. In the case of the Marginal peoples, a lineage ordinarily could not exceed 50 or 60 people before it had to split, a new lineage budding off to become an independent band; only an unusual ecology, such as that based on the horse in Patagonia, permitted several lineages to remain together in a single mixed band. Among the Tropical Forest tribes, the greater resources permitted the lineage to become much larger before a new lineage separated off, and the new one often set up its own house not far from the parent lineage. Where several houses made up a community, the arrangement varied with local circumstances. In some areas, they were tightly clustered around the chief's house and the men's club, and they were enclosed by a palisade—the coastal *Tupí* village had up to 700 or 800 persons. In other places, as along the Amazon River, they were closely spaced for a distance of many miles. In either case, it would seem that the household typically consisted of a lineage, had its own chief (the family head), and retained considerable independence.

More rarely, as among the *Apiacá*, the maloca, or large house, accommodated several hundred individuals who evidently constituted several kin groups.

Among the Tropical Forest people as among the Marginal tribes, the distinction between the exogamous sib and the lineage or extended family is often difficult to make. By definition, a sib or clan is exogamous regardless of whether the members live together and whether their relationship can be traced. The fiction of relationship of its members is usually supported by legends that trace their descent from a mythical ancestor, and their cohesion is maintained by ceremonies and other observances. Among the Tropical Forest peoples, the most common sociopolitical unit was the extended patrilineal family, occupying a single large house. Where the house stood alone the group was exogamous by locality as well as by kin. In the northwest Amazon, each exogamous household had ceremonies and myths, and thus might be considered a localized sib. In other regions, however, several extended households formed a village, so that there was household exogamy but not local exogamy, nor sibs properly speaking. In short, there seems to have been a strong predisposition to patrilineality, which showed every gradation to true sibs, though lack of genealogical and other data prevents their adequate classification.

It is logically possible that matrilineal, extended households might have occurred as the counterpart of patrilineal ones. Actually, they and matrilineal sibs are restricted to the Guianas, the *Goajiro*, and the *Patángoro*, and they occur doubtfully among the Ucayali River *Panoans* and perhaps some upper Guaporé River tribes.

Strong chieftainship and social classes were not characteristic of the Tropical Forest tribes, because duties and obligations based on kinship overshadowed those based on status. Where the village consisted of a single lineage, the chief was merely the family head and interpersonal relations were controlled by factors of age, sex, and relationship. In the strongly nucleated, multilineage villages, there was a village chief, who usually succeeded his father and was often a shaman. In such villages, the chief controlled some of the activities of people who were not his relatives. This represents the beginning of civil government, but the chief had authority only in limited contexts, such as land use, warfare, or hunting. Among the Circum-Caribbean and Andean tribes, the chief's status carried many special privileges; the

Tropical Forest chief, however, merely served the community, and he gained little personal advantage beyond a few extra wives and some support from village members.

Common people frequently acquired some status through special activities, especially warfare and hunting, but this rarely led to the formation of a special class and never to hereditary rank. Where villages were usually large and warfare was well developed, as in the Guianas and among the coastal *Tupí*, the chiefs had unusual power and a semihereditary position, the warriors achieved fame, and the war captives tended to form a loose slave class. But the classes were not fixed: the slaves were fitted into the kin groups, usually intermarrying into their captive's family and being regarded as relatives, and their children became freeman. The serflike status of the *Macú* with respect to the *Tucano* was exceptional. The eastern Chaco, however, evidently had an aboriginal tendency to a class system. Here, certain tribes carried on considerable warfare and accorded warriors membership in a special class. After the Conquest, the acquisition of the horse so intensified warfare and the spirit of conquest that captives, both individuals and whole tribes, came to form a lower class while the warriors became a definite upper class. These Chaco tribes are not classed with the Sub-Andean peoples, however, because the classes were largely of post-Columbian origin and because the tribes lacked other diagnostic Sub-Andean features, such as the priest-temple cult.

**Types of kinship basis.**—The lineage seems to have been fundamental to most if not all of Tropical Forest society, and even in multilineage villages each lineage probably retained its identity. The Tropical Forests were overwhelmingly patrilineal, even where the sib was the basis of society (map 20). Matrilineal descent is recorded only in the Guianas and parts of Colombia among tribes adjoining or near the Circum-Caribbean area. As the latter seems to have been definitely matrilineal, the peripheral occurrences of matrilineal descent may have been the result of Circum-Caribbean influence which is postulated also to have introduced considerable material culture and technology to the Tropical Forests. (See p. 726 ff.) The native patrilineal basis is perhaps correlated with the importance of hunting and fishing, both of which were masculine activities.

*The patrilineal tribes.*—The extended, patrilineal household was characteristic of the upper Amazon Tropical Forest (*Panoan*, *Tupian*) and the semi-Marginal peoples (*Záparoans*, *Pebans*, *Western Tucanoans*, and some *Panoans* and *Arawakans* (Handbook, 3, pp. 507–798)). Usually the village consisted of a single communal house, but the *Tupí* on the Amazon and Marañón Rivers had larger, multihouse villages, and they and the *Quijó* kept captive slaves. The *Panoan* tribes of the lower Ucayali River are accredited with totemic, matrilineal clans, but the data are not conclusive. The *Arawakans* of the neighboring Juruá-Purús region had animal-named patrilineal households. Among the *Tenetehara*, the coastal *Tupí*, and the *Guaraní*, the villages were extremely large and each house held 10 or more patrilineally related families (several hundred persons) under a powerful chief who was usually the shaman. Intensive warfare contributed to *Tupí* village cohesion.

Tribes with patrilineal sibs, except the *Palicur* and *Chacó*, adjoined those with the patrilineal lineage or household (map 20). In the northwest Amazon, the *Tucuna* had patrilineal, nonlocalized sibs despite some matrilineal households. The *Tucanoans* and possibly the *Arawak* and *Carib* of the Uaupés-Caquetá area and the *Witotoans* had patrilineal sibs, each generally localized in a communal house. The *Witotoans* were cannibals, and kept some captives as slaves. An outstanding *Tucanoan* feature, perhaps shared in some degree by the *Witotoan*, *Tucana*, and *Yurimagua*, was the ancestor cult into which boys were initiated with use of sacred trumpets. Each household or localized sib held its own cult ceremonies. To the north of the northwest Amazon, the *Achagua* and *Sáliva* also had patrilineal, totemic sibs, each perhaps occupying a communal house. Often one such house constituted a village. Chieftainship was weak, and warfare was purely defensive, lacking trophies, cannibalism, or slave taking. Sexual cleavage is manifest in the use of a men's clubhouse, where drinking bouts were held.

A second main center of patrilineal sibs was among the *Tupian* tribes of the lower Madeira-Tapajóz region (*Mundurucú*, *Parintintin*, and *Tupí-Cawahíb*). The *Maué* and lower Xingú *Tupians*, however, had small villages consisting of a few single-family houses. The *Mundurucú* settlements, though large, were dispersed, and each house had its own chief.

The *Chocó* also had exogamous, patrilineal lineages, which were perhaps the equivalent of sibs. The chief had little power and warfare was not developed.

*The matrilineal tribes.*—The matrilineal tribes included several in the Guianas and the *Goajiro*, *Cagabá*, *Patángoro*, and Antillean *Carib*. In the Guianas, nonlocalized matrilineal clans were found among the coastal *Arawak*, the *Wapishana*, and *Aparaí*. Although society was based on kinship, war captives formed a loose lower class among both the *Arawak* and *Carib*, and Guiana *Carib* chiefs enhanced their prestige by attaching a special following of freemen, usually sons-in-law, to their households. The *Aparaí* and *Papishana*, however, appear to have coupled patrilocal and presumably exogamous settlements with their matrilineal clans.

The *Goajiro*, whose aboriginal culture is virtually unknown, had matrilineal sibs. In post-Columbian times, a cattle-horse complex introduced a secondary series of social cleavages based on wealth. The *Chaké* ("*Motilones*") south of the *Goajiro* had small shifting farm villages. The *Cágaba*, despite archeological evidence in their territory of a more advanced culture, had a simple unstratified, matrilineal society.

The *Patángoro*, like their Sub-Andean neighbors, had villages of 80 to 90 houses and a ceremonial structure, but the basis of their society was matrilineal clans rather than classes. Their warfare was for the purpose of obtaining victims for cannibalism and not slaves.

*Other sociopolitical groups.*—Of the remaining tribes of the Tropical Forests, many were doubtless predominantly unilineal and others may have been bilateral, but the basis of their descent is not now clear.

In eastern Colombia, the *Guayupé* and *Sae* lived in palisaded villages, each with a plaza and ceremonial building in the center. They had an elective chief, who used a stool, wore feather blankets, and was cremated at death, but other people acquired status with age. Boys were initiated into warrior status, but war was waged to take victims for cannibalism and human trophies, not to procure slaves. The nearby *Otomac* and *Guamo* also had large villages, and the chiefs controlled groups of houses. The *Betoi* village had one or more houses, each sheltering an extended family and ruled by the elder. A unique *Airico* feature was hired laborers.

The *Cayapa* and *Colorado* in western Ecuador had villages consisting of one to several multifamily houses, but whether these sheltered lineages is not clear.

In eastern Brazil, some of the small non-*Tupian* tribes were on a Tropical Forest level, but little is known of their sociopolitical groups. The "*Tapuya*" had palisaded villages. The *Camacán* communal houses sheltered as many as 20 families. The *Tarairiu* were governed by strong shaman-chiefs, who had special announcers; when they died, these chiefs were cremated and their ashes drunk, whereas deceased commoners were cooked and eaten.

Farther south, around the Paraná Delta, the warlike *Guaraní* and *Timbú* lived in permanent, palisaded villages, in contrast to the nomadic, Marginal *Charrua*, *Querandí*, and other neighbors.

In eastern Bolivia, all tribes except the Sub-Andean *Mojo*, *Bauré*, *Manasí*, and *Paressí* (p. 714 f.) were probably Tropical Forest in their general culture, though little is known of the composition of their sociopolitical groups. Some had small communities and perhaps should be classed with the Marginal peoples: each *Atsahuaca* and *Chapacuran* family lived in its own lean-to; the *Chimane* village consisted of a few small houses; the *Canichana* hamlet was fortified and contained only 60 persons. At the other extreme were tribes with large communities and some Sub-Andean features. The *Cayuvava* village had 1,800 to 2,000 persons, and as many as 7 villages were controlled by a single chief. Each village had a temple where offerings were made. The *Xaray* communities had 1,000 persons; four communities were controlled by one chief. Perhaps the *Cayuvava* and *Xaray* belong with the Sub-Andean tribes. Between these extremes, the *Yuracare* village consisted of one or several large houses, each perhaps sheltering a lineage and governed by the family head. Similar villages are also reported for the *Guarayú*, *Pauserna*, *Mosetene*, *Tacana* (100 to 200 persons per house), *Tiatinagua* (2 to 8 families per house and each house under its own chief), *Southeastern Panoans* (2 to 3 communal huts per village), *Yamiaca*, and *Chiquito* (several small houses and a men's club in each village, and a village chief and elected council). The *Chiquito* and *Canichana* were somewhat warlike. *Chiquito* captives married into the tribe; *Canichana* captives were eaten or else became slaves, but such slavery seems not to have created a true class system.

In the Gran Chaco, the western tribes belonged with the Marginal peoples, but the *Mbayá*, *Payaguá*, *Mocoví*, *Abipón*, and *Guaná* should certainly be classed with the Tropical Forest tribes. The kinship basis of society is obscure, but to judge by postmarital residence, the *Arawakan Guaná* may have been somewhat patrilineal, like the eastern Bolivian tribes, and the others somewhat matrilineal, like the western Chaco Marginal peoples. These tribes had an aboriginal basis for a stratified society in their special warrior's class. After the Conquest, the acquisition of horses intensified their military activities and true classes emerged. The *Mbayá*, who were exceptional for their wars of conquest, had the following social strata: (1) Several kinds of nobles and chiefs with special privileges; (2) a warrior class into which boys were initiated; and (3) serfs, consisting of conquered tribes, especially the *Guaná*, and their descendants. Among the *Mocoví* and *Abipón*, the privileged class of warriors became a class of nobles, distinct from the commoners. The *Payaguá* drew a distinction between chiefs, nobles, and commoners. The *Tereno* and *Guaná*, though victims of their more aggressive and powerful neighbors, had a somewhat endogamous class of chiefs, a warrior group which achieved its status, and a class of commoners, or "camp followers." The *Tereno* also were divided into two endogamous moieties.

**Warfare.**—Warfare was probably a major reason for the strongly nucleated communities in much of the Tropical Forest area. Houses were closely grouped and surrounded by palisades, additional protection being afforded by pitfalls, poisoned stakes planted in trails, coltrops, and other devices.

Whereas the Marginal tribes fought only in self defense or for revenge, a large number of Tropical Forest peoples carried on warfare to obtain human trophies and victims for cannibalistic feasts. In addition, a few tribes, including several of the western and northwest Amazon, some in the Guianas, and the horse bands of the Chaco, took slaves. But true slaving was mainly a post-Columbian development; tribes which had formerly killed and eaten their victims and many tribes which had never taken captives at all conducted raids to obtain slaves for sale to the Whites.

Cannibalism, though widespread, was not practiced by all tribes. The *Tupí* and *Carib*, who attached great importance to warfare, killed and ate their captives, often after keeping them a long time. Unlike some of the Sub-Andean peoples, they did not sacrifice their victims in religious rites; ceremonial objectives, though not absent, were secondary. Cannibalism seems to have been motivated by deep hatred of enemy peoples, and there were unending reprisals against former hostilities. Cannibalism was also practiced among the *Tupí* and some of the *Zaparoans* of the upper Amazon, the Guiana *Arawak*, the *Witoto*, and other tribes of the northwest Amazon, the *Patángoro* in Colombia, the *Canichana*, in eastern Bolivia, and the *Amniapa* and *Guaratagaja* of the Guaporé River, but elsewhere it was absent.

Human trophies, which were displayed in order to give their takers prestige and to insult the enemy, were of many kinds; shrunken whole heads (Montaña), skulls (often made into cups), flayed skins (*Arara*), scalps, and flutes made of long bones (p. 409). Trophy taking tended to be associated with cannibalism.

**Crisis rites.**—In societies based essentially on kinship and lacking public ceremonialism, crisis rites had great importance in underlining sex differences, in marking age status, and in providing focal points for ritual activity.

Birth customs involved many magical observances and taboos, and, though they were primarily concerned with the mother and child, the father was often deeply involved. (See The Couvade, p. 369.)

Pubescent girls were always subjected to certain rites, which, though more or less concerned with their physiological condition, also signaled a social transition to womanhood. The girl was isolated and, in different areas, whipped, made to dance, scarified, her hair cut, her clitoris excised (*Sáliva*), given drugs, and the like. In many tribes, boys passed informally into manhood, their status being evidenced not only by dress and behavior but often by their occupation of the men's clubhouse. Frequently, however, their hair was cut, their noses pierced, or some other public rite celebrated, and in some instances, they were initiated into a secret society or cult, as mentioned below. The *Sáliva* boy was circumcised.

In contrast to the Marginal tribes, who almost always buried their dead, the Tropical Forest peoples disposed of the body in many ways, but they rarely accorded chiefs or leading men special treatment. Only the *Guayupé* and *Sae*, both doubtless under Andean influence, gave chiefs burial different from other people.

Direct earth burial was the principal Tropical Forest method, but many tribes subsequently exhumed the bones and reburied them in the earth (*Mundurucú*, *Apiacá*, *Abipón*, *Mocoví*), in a cave (*Otomac*), or in urns (upper Amazon *Tupí*, *Goajiro*, some *Island Carib*, *Guaraní*, coastal *Tupí*, and probably many other tribes), or they preserved the bones in the house or elsewhere (Juruá-Purús *Arawak*). The *Atorai* and *Rucuyen* cremated their dead, and several tribes drank the cremated ashes in chicha (Montaña, *Sáliva*, *Island Carib* in the case of chiefs, *Arapium*, *Guayupé*, and *Sae*). The Montaña, *Tarairiu*, and *Arapium* also ate the corpse. The *Chaké* exposed the body and later made a bundle of the bones.

The practice of mummification, which in the Andes is associated with strong ancestor worship, is accredited to only the *Piaroa* of the upper Orinoco. Many Tropical Forest tribes, however, had what amounted to a cult of the dead; for example, the northwest Amazon and Guianas, where there were public mourning ceremonies.

**Religion and shamanism.**—Tropical Forest religion resembled that of the Marginal peoples in that it centered in the shaman, who had his own supernatural helper and whose main functions were to cure, prognosticate, and perform magic. The Circum-Caribbean and Andean pattern was slightly foreshadowed in that the shaman sometimes performed oracular functions, but he probably consulted his own spirit helper rather than a tribal god. In fact, true tribal gods were rare and there were no temples or idols. Celestial beings, which, in the Circum-Caribbean and Andean areas, were frequently tribal deities and the objects of public ceremonialism, were usually myth characters. Several Tropical Forest tribes, however, had public ceremonials, and a few of these involved tribal gods and spirits, though most of them were secret society rites.

There were considerable local differences in religion, owing to the limited distribution of secret societies, cults, ritual elements, public festivals, and particular concepts of gods and spirits.

*Cult religion.*—Cult religion is exemplified by the sib ancestor cult found in the northwest Amazon (Handbook, 3: 885) and perhaps among the *Achagua* and *Sáliva* (Handbook, 4: 410). This, however, was as much a secret society as a tribal cult: boys were initiated to membership and to the secret of certain sacred religious paraphernalia that were taboo to women and children. The Juruá-Purús feast of nature spirits, though providing public festivals, also involved sex distinctions in that the sacred musical instruments were taboo to women and children. Even the *Tacanan* priest-temple-idol cult (Handbook, 3: 447), though somewhat Andean in general features, seems really to have been a boys' initiation rite, women being excluded.

*Public ceremonies.*—The *Tupian* Grandfather cult, with its messianic features and hope of a better life (Handbook, 3: 131), was a true tribal religion. The *Sáliva* ceremonies in honor of the creator (Handbook, 4: 410), though in a wholly different pattern, were also tribal rites. So were the harvest ceremonies of the lower Amazon (*Tupinamba*, *Tenetehara*, *Maué*, *Mundurucú*), the *Guaraní*, the *Tarairiu*, and the *Chaké*, the fertility rites of the *Manao* and the Juruá-Purús *Panoans*, the first fish ceremonies of the *Achagua* and *Sáliva*, the Pleiades festival of the Chaco, the bush spirit ceremonies of the *Tupinamba*, *Mundurucú*, and *Guaraní*, the ghost rituals of the lower Xingú tribes, and the mourning ceremonies of the Guianas and Northwest Amazon.

*Supernatural beings.*—The principal deities tended to be myth characters rather than objects of religious worship, except that among the *Tupian Guaraní*, *Tupinamba*, *Parintintin*, and *Apiacá* they entered something of a cult. The main gods or mythological beings were most often the sun, moon, stars, and thunder, and it is easy to see in them prototypes of some of the major Andean tribal gods. Gods of mountains, springs, rocks, and ocean, and place spirits generally were much less important than in the Andes. There was, however, belief in a multitude of bush and other nature spirits, and many of them were revered and feared. Ghosts, too, were commonly of religious importance, especially as shamans' helpers.

*Shamanism.*—Shamanism of the Tropical Forests was in the general pattern of the Marginal peoples. The shaman obtained a special spirit helper. Little pertinent information is available, but it seems usually to have been a nature spirit or human ghost (for example: a tree spirit, *Tucuna;* a jaguar, *Witotoans*, *Tucanoans;* a dead shaman, *Jívaro*). The werejaguar concept was widespread. The shaman's principal function was to cure disease, which he did with the aid of a drug or narcotic, especially tobacco but locally with other plants (this volume, pp. 588–599), and by massaging and sucking out an object believed to have caused the sickness but sometimes by exorcising evil spirits or by recovering the patient's "lost soul." The shaman also practiced black magic, prognosticated, controlled weather, and, where there were group ceremonials, he generally officiated. In fact, his supernatural power was often so great as to give him special social status, and, in many tribes, great political power. Among the *Tupi*, he was often the chief.

*Ritual elements.*—Many ritual elements, such as the ant ordeal, snuff taking, gashing and bleeding, circumcision, scarification, flogging, use of sacred trumpets, cutting the hair, use of the scratching stick, and the like were, very widespread, but they entered different local contexts. For example, the ant ordeal was used by the *Rucuyen* and some of the *Tupí* south of the Amazon to test young boys, by the *Andaquí* to try out warriors before battle, by the *Sáliva* to induct new chiefs, by the Guiana *Arawak* as a feature of death rites, and by other Guiana tribes in hunting ritual. Whipping was used by the *Macushí* and Montaña tribes for pubescent girls, by the *Guayupé* and *Sae* to make boys into warriors, by the *Yurimagua* while initiating boys to the tribal cult, by the *Manao* for young boys, and by the *Chaké* (*Motilones*) for participants in the harvest festival. The scratching stick was employed by *Tucanoan* and *Chocó* girls during their isolation at puberty.

### TECHNOLOGY AND MATERIAL CULTURE

The Tropical Forest peoples had a far richer technology and material culture than the Marginal tribes. These features were found also in the Andean civilization, which, however, elaborated them far beyond the Tropical Forest. The Tropical Forests did true loom weaving with cotton, but used no wool and lacked the fine and intricate Andean weaves. They often made good painted or modeled pottery but fell far short of the Andes in number of colors and intricacy and variety of design. The Tropical Forests entirely lacked metallurgy, stone construction, and stone sculpture, the last two precluded by the absence of stone.

On the other hand, the Tropical Forests had a number of traits not found in the Andes: frame houses, hammocks, mosquito shelters, the blowgun, pepper pot, rubber, bark cloth, dugout canoe, climbing ring, hollow-log drum, babracot, and poisoned arrow. Some of these had only a partial distribution in the Tropical Forests, but many extended to the Antilles and Central America.

**Basketry.**—The characteristic basketry type is woven, usually twilled, but in many places it is also hexagonal and of wicker. Some tribes such as certain of the *Tupí* south of the Amazon (*Parintintin*, *Tupí-Cawahíb*), however, used only a simple twilled basket woven of a single palm leaf. The Guianas had the greatest variety of weaves and basketry types. Twining is found only in the northwest Amazon and in one or two east Bolivian tribes (map 21), and coiling, which is essentially Andean, only among the *Chocó*.

**Weaving.**—True loom weaving—a simple technique with the weft passed in and out between the warps—was widespread, extending from the Guianas to the upper Amazon and south to the *Tupí-Cawahíb*, *Guaraní*, and *Mbayá*. Many tribes, however, only wove bands, because large fabrics had little use in a climate in which people generally wore few garments. The main yarn was cotton, usually domesticated though sometimes wild, but some tribes used bast of wild plants. Designs were largely limited to woven-in stripes, but tribes bordering the Andes painted designs on their textiles.

The *Tucanoans* and most of the *Tupí* tribes had a twined or finger-weave without a loom—a technique similar to that of twined basketry in which a pair of wefts enclose each warp element, being given one turn or twist before enclosing the next.

In addition, netting occurred in the Guianas, northwest Venezuela, and eastern Bolivia, and among the *Achagua* and *Sáliva* (who had no true loom).

**Ceramics.**—Pottery was made by all these tribes, but the wares varied greatly. They were plain on the Juruá-Purús and in northwestern Venezuela. Elaborately modeled wares occurred in the lower Amazon and may be linked with the Cirum-Caribbean area. Painted vessels were found in the same area as the last and also up the tributaries of the Amazon and south among the *Tupí-Guaraní.*

**Houses and household goods.**—The Tropical Forest house, though varying greatly in detail, was typically a frame, thatch-covered dwelling which accommodated several families and often had considerable size. The eastern Chaco horsemen, however, used portable, mat-covered dwellings. The house was furnished with wooden stools, hammocks (woven, twined, or netted of various materials, according to the locality), mosquito shelters (Montaña, *Otomac*), babracots, mortars and pestles, and storage baskets. The hammock has spread rapidly in the historic period, and the platform bed, a trait of the eastern Andes, has survived only in a few tribes bordering the Andes.

**Weapons.**—The bow and arrow occurred among practically all Tropical Forest tribes. The bow often had great length, and arrows were characteristically equipped with a large variety of wooden points—multiprongs, barbed rods, lanceolate blades, knobs, harpoon heads, and other forms for special purposes (this volume, p. 235 ff.)—and were frequently poisoned (*Achagua*, *Sáliva*, *Patángoro*, *Lucalia*, Guiana *Carib*, eastern Bolivia). Stone points, though typical of the Marginal hunting tribes of the south, were not found, owing mainly to the scarcity or lack of stone in the forests.

The spear thrower survived in a few areas—Montaña, Juruá-Purús *Arawak* (pp. 244–247)—but was evidently being replaced by the bow, a process that continued into the historic period (Handbook, 3: 526).

The blowgun, an early Andean trait and possibly of trans-Pacific origin, was limited to the western Amazon and extended across the northern Andes to Central America (pp. 248–252; map 4). It continued to spread during the historic period, a condition of its diffusion probably being increased intertribal contacts and trade of poison without which it is worthless. Its value lay in providing a silent, highly effective means of hunting arboreal game. There seem to be few records of its use in warfare, even by tribes which did not hesitate to kill their enemies with poisoned arrows.

Shields occur among some Tropical Forest tribes (p. 259 f.; map 5).

**Bark cloth.**—Bark cloth, a trait of possible trans-Pacific origin, had a distribution very similar to that of the blowgun (pp. 67–68). Among many tribes which practiced loom-weaving, it was used primarily for religious masks and as an alternate for cloth. Among others, such as the *Chocó*, it was used instead of cloth.

**Metallurgy.**—None of the Tropical Forest tribes smelted or cast metal in pre-Columbian times, but objects of gold, silver, and sometimes copper from the Andes had reached a great number of them, many a considerable distance away; for example, the *Xaray* and *Guaraní* of the Paraná and Paraguay Rivers and the tribes of the middle Amazon.

**Rubber.**—Many but not all the Tropical Forests shared a knowledge of rubber working with Central America and México (p. 227). Despite its present-day importance, rubber was of minor value to the natives, being used only to make balls, syringes, rings, and figurines.

**Musical instruments.**—The Tropical Forests had a considerable number of musical instruments, some of special interest. Gourd rattles, which were very widespread, were generally shamans' instruments. Trumpets tended to be associated with a secret cult, in which they represented the voice of the deities and were taboo to the unitiated (p. 576 f.), but the *Otomac* used them in lay festivals and the *Sáliva* in funeral ceremonies. Hollow-log signal drums, possibly of trans-Pacific origin, had a distribution very similar to that of bark cloth and the blowgun (Central America, Colombia, *Witotoans*, western Guiana, the *Betoi* and their neighbors, *Achagua*, *Chocó*). The panpipes, perhaps also of trans-Pacific origin, were even more widespread than the hollow-log drum, and they occurred also in all periods of Andean history. Among other instruments were various flutes, jingles, and stamping tubes to mark time.

**Narcotics and stimulants.**—Chicha was common to all Tropical Forest tribes, who drank it in quantity on festival occasions. An *Ilex* was drunk as maté in Paraguay and eastern Brazil, and another *Ilex* as guayusa in the western Amazon (map 10). Tobacco was the main narcotic, being used by all tribes except some of the *Tupí* (p. 525 f.; map 9). Other narcotics had a more restricted distribution, and occurred especially in the northwest Amazon (map 15).

### THE SOUTHERN ANDEAN TRIBES

The principle southern Andean tribes were the *Kunza*-speaking *Atacameño* (Handbook 2: 41, 599), the *Kakan*-speaking *Diaguita* or *Calchaquí* (Handbook 2: 39–40, 633–637), who occupied the extreme deserts, especially those west of the Andes, and the *Araucanians* (Handbook, 2: 42–44, 687), who lived in the temperate zone of winter rainfall in Central Chile.

Many features of the cultures of these tribes were of unquestioned central Andean origin; the agricultural complex, llama raising, guinea pigs, dogs, wool and cotton weaving, metallurgy, ceramic styles, slings, quipus, garment types, blood sacrifice, stone houses, stone cist graves, and mummification. The *Araucanians*, who experienced somewhat less Andean influence than the *Diaguita* or *Atacameño*, had a number of traits that linked them with the Tropical Forest tribes: frame, thatched houses, mortars, dugout canoes, cannibalism (including drinking cremated ashes with chicha), human trophies, sporting games, and urn burial. In all three tribes, however, the sociopolitical units were in the Tropical Forest rather than Andean pattern.

### THE ECOLOGICAL BASIS

These tribes were intensive farmers and their basic crops—maize, quinoa, beans, and potatoes—were Andean. In the Chaco Santiagueño (Handbook, 2: 655) and La Candelaria (Handbook, 2: 661), east of the Andes, flood-plain farming was practiced, but in the extreme deserts to the west irrigation was necessary. Irrigation and farm terracing, both Central Andean traits, extended to the Quebrada de Humuhuaca in northwest Argentina (Handbook, 2: 619) and to the northern *Araucanians*.

On the coast, fish were taken in some quantity by means of hooks, drugs, weirs, spears, baskets, and harpoons, but habitation sites were limited to the few sheltered coves where there was fresh water. The central coast of Chile was far more favorable for occupation than the north coast.

Transportation was well developed. In the northern part of the area, pack llamas were driven over roads and balsa canoes were used along the coast; on the south coast, dugout and planked canoes were employed.

### THE SOCIOPOLITICAL AND RELIGIOUS PATTERNS

**Sociopolitical patterns.**—Despite this fairly efficient technological basis, the population of the Atacameño deserts was very sparse and the people lived in widely separated, fortified villages, each consisting only of a few one-family stone houses. The village apparently was made up of related families under a patrilineal chief and it was totemic; perhaps it might be regarded as a patrilineal lineage or sib. The *Atacameño* seemingly had no warrior class, though they carried on some warfare, and there is no evidence that they accorded chiefs special privileges or special burial. They lacked a temple-priest cult. In the area of the Puna de Atacama and the Quebrada de Humuhuaca, evidence of temples and idols is also absent, and the archeological remains of villages and graves are basically like those of the *Atacameño.* Warfare in these areas was carried on for individual honors, and trophy skulls were kept.

The Argentine *Diaguita*, also living in an arid area, had towns similar to but probably somewhat larger than those of the *Atacameño.* The destruction of a house at the death of an occupant, however, is evidence of some settlement instability. The *Diaguita* may have been divided into lineages, but political consolidation probably extended beyond kin groups and incipient class structure is evident. Village chiefs, whose succession was patrilineal, sometimes contracted war alliances with other chiefs. Chiefs may have received special burial; in Chile, certain especially elaborate archeological graves contain the bodies of several persons. The *Diaguita* used large armies in their wars against the Spaniards. Their warriors achieved special status and may have formed a distinct class. They took and tortured captives and made head trophies, but they were not cannibals. The *Diaguita* had no temple cult and probably no class of priests, though special persons seem to have conducted agricultural rites.

The *Araucanians* had a much more fertile habitat and a much denser population than the *Atacameño* or *Diaguita.* The communities were not larger, however; instead, the population was simply divided into a greater number of comparative small communities, which were structured on a kinship basis in the Tropical Forest pattern. Each settlement consisted of a single house, which, reputedly for fear of witchcraft, was located some distance from its neighbor and was often palisaded or fortified. It was occupied by 3 to 8 individual families—15 to 40 persons—who apparently constituted a totemic, patrilocal, and probably patrilineal lineage, i. e., what is sometimes called a localized sib. The lineage had its own chief and apparently owned its farm land.

The lineage or settlement seems to have been comparatively independent, but several related lineages sometimes constituted a larger, less cohesive unit, and the several units of a district in turn may have been united into loose tribelets under chiefs with only slight power and nominal titles.

*Araucanian* society, though based on kinship and essentially democratic, had incipient classes: (1) wealthy men and chiefs, who, however, had no great privileges except that of polygyny and who did not receive special burial; (2) commoners; and (3) slaves and captives, who did not constitute an important labor class. Wealth and military exploits were the means of acquiring status. Today, with an economy based on sheep, horses, and mules as well as on cultivation, the rank is more strictly economic: the wealthy, the commoners, and the poor peons who work on the estates.

The *Araucanians*, always outstanding warriors, not only took slaves, but they captured sacrificial victims. The victims were tortured and killed for cannibalistic but not ritualistic purposes. Their flesh was cooked and eaten, their hearts sucked by headmen, and their bones burned and the ashes drunk in chicha. Sometimes their skulls were made into trophy cups, their long bones into flutes, and their facial skin into masks.

**Religion and shamanism.**—There is little evidence of a true temple-idol-priest complex in the southern Andes, but central Andean influence is seen in public ceremonialism that was connected with tribal gods and that was held probably according to a ritual, agricultural calendar.

The *Diaguita* held agricultural ceremonies, and the *Atacameño* worshiped the sun and had fertility rites for their fields. The most important public *Araucanian* ceremony was conducted by priests who supplicated the Supreme Being and Creator with prayers and blood sacrifice of animals to send good crops and health. The *Araucanians* also had a cult connected with a deity responsible for natural catastrophes, and they appealed to various spirits, including the sun.

There is some question whether all these public ceremonies were entirely Andean in origin, but there is little doubt that many of the ritual elements were. The latter included: llama, and later sheep, sacrifice, and extraction of the heart blood; aspersions of blood and chicha; and four sacred directions.

Shamans obtained their supernatural power from deceased shamans and from the Supreme Being, to whom they prayed. The *Araucanian* shaman, like that of the northwest of North America, was often a transvestite and used a tambourine. He prognosticated, made rain, and cured disease. Disease was believed to be caused by the intrusion of foreign objects, by soul loss, and by magic.

**Disposal of the dead.**—Interment of the dead was the rule, but mummification and stone-cist graves, both Andean traits, were not uncommon. Urn burial occurs archeologically in *Araucanian* territory and in the area of La Candelaria and Chaco Santiagueño.

## TECHNOLOGY AND MATERIAL CULTURE

**Pottery.**—Pottery was made by all southern Andean tribes but that of the *Araucanians* was mostly undecorated and crude whereas the *Diaguita* wares were bichrome and the *Atacameño* were trichrome.

**Basketry.**—The earliest basketry in archeological sites was coiled, but twining was introduced at a later period and a twilled weave was finally adopted by the *Diaguita* and *Araucanians.*

**Weaving.**—Weaving was done on the true loom with llama and alpaca wool as well as cotton. The *Diaguita* also used vicuña wool. Textiles had woven-in designs in color.

**Metallurgy.**—Copper and some gold and silver were smelted and worked by the *Atacameño* and *Diaguita*, the latter also making bronze and doing some casting. All three metals were used in native times by the *Araucanians*, but it is doubtful whether they were mined or smelted. To the east, metallurgy did not extend to the Chaco Santiagueño.

**Weapons.**—Andean weapons present among these tribes were slings, lances, bronze knuckle-dusters (*Diaguita*, *Atacameño*), stone-head clubs (*Atacameño*, Humuhuaca, *Diaguita*), bronze axes, star-head copper clubs (*Diaguita*), shields, helmets, hide-cloak armor, and spear throwers (*Araucanians*, *Diaguita*). More characteristic, however, were bows and arrows (poisoned only in the Chaco Santiagueño area) and bolas (*Atacameño*, *Diaguita* doubtfully, *Araucanian*, post-Columbian). Lassos among the *Araucanians* were post-Columbian.

**Dress.**—Andean-type shirts, dresses, and mantles were common, especially after the *Inca* conquest.

**Musical instruments.**—The musical instruments were panpipes, end-flutes, rattles, trumpets, drums, bells, and ocarinas.

**Stimulants.**—All these tribes probably made chicha.

### THE SUB-ANDEAN AND CIRCUM-CARIBBEAN TRIBES

The fourth volume of the Handbook describes the tribes whose distinctive sociopolitical and religious patterns were called Circum-Caribbean or Sub-Andean. These tribes were distributed from the Antilles across the northern coasts and northern Andes of South America and through Central America to the *Maya* frontier in Honduras. With the data of all volumes of the Handbook available for a more detailed comparison of the cultures, it is now evident that the Circum-Caribbean tribes of Volume 4 were somewhat interspersed with Tropical Forest peoples, while several tribes, especially those of the Ecuadorian and Colombian Andes belong with the Sub-Andean rather than Central Andean cultures. It is also clear that several tribes of eastern Bolivia, though included with the Tropical Forest peoples in Volume 3, really had the Sub-Andean patterns.

In the following classification, all tribes are called "Circum-Caribbean," but the designation of "Northern Andean" is used to distinguish certain tribes of Ecuador and Colombia from the other Circum-Caribbean peoples, because they had a considerable number of specifically Central Andean culture elements (below). Classed as Circum-Caribbean are the following: The peoples of Central America south of the *Maya* frontier (Handbook, 4:26–28), of the northern Colombian Lowlands (4:329–338), of the Highlands of western Venezuela (4:469), of portions of northern Venezuela (4:22–23), and the *Arawak* of the Antilles (4: 507–546). The additional name, "Sub-Andean," is applied to the *Chibcha* (Handbook, 2: 887–909), the peoples of the southern Colombia Highlands (2: 915–960), of Coast and Highlands tribes of Ecuador (2:785–821), and, in eastern Bolivia, the *Mojo* and *Bauré* (Handbook, 3:408–424), the *Paressí* (3:349–360), the *Manasí* (3:389–393), and the *Paunaca* (3:396–397).

The subsistence of the Sub-Andean and Circum-Caribbean tribes differed considerably in the different areas. In general, it was based on fairly intensive farming, but on the sea coasts and in the Antilles, ocean resources were added to agricultural produce. The population was fairly dense, and villages were generally large and permanent.

The Circum-Caribbean and Sub-Andean village resembled some of the Tropical Forest communities in consisting of several houses, each with an extended family or lineage, but the bonds between kin groups were reinforced by stronger political controls and society was characteristically divided into somewhat fluid classes. A group of hereditary chiefs constituted the upper class. The nobility seems to have developed from a class of warriors who attained rank through the display of human trophies and the capture of women for wives and men for cannibalistic feasts and for occasional religious sacrifice. Tribal gods were represented by idols kept in special temples, and they were served by priests. Few tribes had a special hereditary class of priests, however; instead, shamans performed priestly functions, thus acquiring social prestige and political power. The temple rites tended to be oracular seances for the benefit of individuals rather than communal ceremonies for the public good.

Politically, many tribes had achieved multicommunity states, both through federation and conquest, but they never succeeded in consolidating them against revolt in a stable empire like that of the *Inca*. Political consolidation and economic exploitation of conquered masses of people had not advanced sufficiently to supersede a slave class made up of captured individuals.

Technologies and material culture, like those of the Tropical Forests, included pottery, loom weaving, domesticated cotton, woven basketry, dugout canoes, frame and thatch houses, palisaded villages, hammocks, and various other items adapted to tropical or subtropical regions. They also resembled those of the Andes in the use of metals, salt, the litter, guinea pigs, and other elements which were more numerous in Colombia and Ecuador than in Central America or the Antilles. (See below.) Material goods were produced in sufficient quantity to allow local specialization and trade, especially in such items as metals, salt, cloth, pearls, and shell beads.

The Sub-Andean or Northern Andean tribes of Colombia differed from the Circum-Caribbean peoples of Venezuela and the Antilles in possessing such characteristically Andean culture traits as copper smelting and alloying of copper with gold; construction of roads, bridges, hilltop forts, and stone houses; working of salt; balance scales; quipus; maces; gold pincers; coca; war banners; the practice of brother-sister marriage; mountain worship; and wrapping of funeral bundles. Some of these features extend through Central America to México.

The *Chibcha* of Colombia were previously classed with the Central Andean tribes because it has always been supposed that they loomed above their neighbors in political and religious achievements. Now that the Conquest Period culture of the other Colombian tribes is better known, it is clear that the *Chibcha* were not very distinctive. They had no urban centers, and their political expansion was little if any advanced beyond that of several other Northern Andean tribes. Their temple cult was patterned on oracular performances for individual ends rather than public worship according to a ritual cycle, and their hereditary priesthood, though unusual, was not unique. Their technology and material culture was not outstanding, even by Sub-Andean standards.

Ecuador was incorporated into the *Inca* Empire about 1495, some 40 years before the Spanish Conquest, but in pre-*Inca* times it was definitely Sub-Andean. The effect of the *Inca* conquest was to make the native social stratification more rigid and more hereditary, to impose strong political controls which stemmed downward from the *Inca* Emperor, to establish a number of truly urban centers, and to introduce the *Quechua* language and such material items as new crops, more extensive irrigation works, llama herding, weaving with wool, increased building in stone, cultivation of coca, and new ceramic styles.

The Sub-Andean tribes of eastern Bolivia form enclaves within more backward peoples, as if they had been compressed within migrating groups of Tropical Forest and Marginal tribes. Their material culture, moreover, is much like that of the Tropical Forests, and it lacks metallurgy entirely. Even the *Arawakan* language, which all but the *Manasí* speak, has affiliation with the Amazon, Guianas, and Antilles rather than with the Highlands, and but for their class system and temple-idol cult, they should be classed with the Tropical Forest peoples.

Because the Sub-Andean tribes of eastern Bolivia are widely separated from those of the Circum-Caribbean and Northern Andean areas, they will be described separately.

In the following pages, the culture of these tribes is projected against that of the Tropical Forests and Central Andes. The historical significance of the many features found also in México is discussed subsequently.

## THE CIRCUM-CARIBBEAN AND NORTHERN ANDEAN TRIBES

### THE ECOLOGICAL BASIS

Intensive farming and favorable environments helped support somewhat larger and more permanent villages than in the Tropical Forests. Whereas the Tropical Forest peoples cultivated migratory slash-and-burn plantations in the rain forests or the gallery forests, the Sub-Andean tribes of the Highland farmed in more open country, and even the lowland peoples frequently inhabited and cultivated savannas. Irrigation, an essential and characteristic practice in the Peruvian and Chilean deserts, though unnecessary in the rain forests, occurred sporadically: *Cañari*, the *Chibcha* or their neighbors, the *Timoteans* (who also had storage tanks), the tribes near Barquisimeto in Venezuela, *Cumanogoto*, the *Island Arawak*, and probably other tribes, the determination of which will depend upon archeology.

Some indication of the development of horticulture in the Northern Andes of Ecuador and Colombia is afforded by the number of crops: in the high altitudes, above 8,000 feet, potatoes, quinoa, ullucos (*Ullucus tuberosus*), and cubios (*Tropaeolum tuberosum*); middle altitudes, 5–8,000 feet, maize, arracacha (*Arracacia esculenta*), quinoa (*Chenopodium quinoa*), achira (*Canna edulis*), and auyama (*Cucurbita verracosa*); and, somewhat in the middle altitudes but more in the lowlands, sweetpotatoes, maize, yuca or sweet (but not bitter) manioc, beans, peanuts, and a considerable number of fruits including pineapples, avocados, papayas, custard apples (*Annona squamosa*), chirimoyas (*Annona cherimolia*), and capuli (*Physalis peruviana*). Additional crops were peppers (aji), cotton and/or maguey and cabuya grown for fibers, altramuces (*Lupinus* sp.), and various grasses.

Most of these crops also occurred to the north, throughout Central America, but the number dropped off sharply in Venezuela, where bitter manioc appeared. Bitter manioc apparently spread in post-Colombian times to the Antillean *Arawak* and to Central America. The Antillean *Arawak* grew only potatoes, peanuts, beans, arrowroot, and a primitive variety of maize.

An indication of the relative importance of farming is that it was mainly woman's chore in the Tropical Forests but among many Circum-Caribbean and Sub-Andean tribes, as in the Central Andes, men also were cultivators.

In the lowland and coastal areas of both the continent and the Antilles, however, sea and river resources compensated for the smaller number of crops, and the population density was extremely great.

Llamas became important in Ecuador only after the *Inca* conquest and they never reached Colombia, but the guinea pig extended throughout the Northern Andes, probably to most of Colombia. The Muscovy duck and perhaps the dog were found in all Northern Andean and Circum-Caribbean tribes. The chroniclers mention a curious "mute dog" among the *Aburrá* of Columbia and the Antillean *Arawak*, but it may have been a tame bush dog (*Icticyon venaticus*) or a fox. The domesticated turkey may have been kept by some Central American and Venezuelan tribes. The Antillean *Arawak* and perhaps the Columbian tribes had "domesticated" parrots. (See Gilmore, Handbook, vol. 6.)

## SOCIOPOLITICAL AND RELIGIOUS PATTERNS

**Settlement pattern and composition.**—The population density was very great, being exceeded only by that of the Central Andes, but the settlement pattern, though imperfectly known, seems to have varied. Among the Highland tribes of Ecuador and southern Colombia, the dwellings—one-family pole-and-mud houses (Ecuador and probably *Chibcha*) or frame houses (*Páez*, *Móguex*, *Pijao*)—were somewhat scattered, and their occupants affiliated with one or another religious or political center. Compact, or nucleated, towns were exceptional. For defense, people retreated to hilltop forts. Examples of these dispersed settlements are the *Cara*, who had but few large towns; the *Puruhá*, whose villages consisted of only 10 to 12 houses; the *Palta*, who lived in isolated houses but assembled on occasion at a ceremonial center or at a chief's house; and the *Páez*, whose village consisted of several polygynous families living in houses clustered around the residence of the village chief.

In the lowland area and in the north Colombian and Venezuelan Highlands, the pattern was one of tightly nucleated towns or villages. The houses were carefully arranged around a central plaza which contained the chief's and nobles' houses or palaces and the temple, and the village was surrounded by a palisade (western Colombia, *Chibcha*, *Timoteans*, *Corgabo*, *Lache*, northern Venezuela, Panamá and *Talamanca* Division). Data on village size are few: the *Lache* village had up to 4,000 persons; the *Aruacay*, 1,000; the Antillean *Arawak*, 3,000; tribes of Panamá, 1,500; and tribes of the Caribbean Lowlands in Central America, 100 to 500.

A feature of the Circum-Caribbean village that relates it to the Tropical Forest village both in settlement pattern and social structure is the occurrence, in some cases at least and perhaps quite commonly, of the large, communal frame house which sheltered an extended family or lineage. The main difference is that the Tropical Forest community often consisted of only one such house, whereas the Circum-Caribbean village had many, so that there was no village exogamy and an individual's social and political affiliations and obligations extended beyond his kin to the many fellow villagers who were unrelated to him. Where the bilateral or conjugal family was the basis of society, as was evidently the case in Ecuador, sociopolitical affiliations also extended to nonkin.

Among most of the Circum-Caribbean tribes, the lineage seems to have been matrilineal and there are some cases of matrilineal clans, but evidence bearing directly on this point is scant. The Talamanca Division and the Antillean *Arawak* seem clearly to have had matrilineal extended families or lineages, and the *Bribri* and *Guaymí* had matrilineal clans. The *Mosquito*, the Southern and Western Colombian Sub-Andean tribes, and the *Chibcha* probably had matrilineal descent of chieftainship. The *Fincenú* even had female chiefs. Female warriors were also commonly reported in this area. A further suggestion of matrilineal descent in Colombia is the common occurrence of avuncular marriage, but this, like the brother-sister marriage practiced by *Inca* Emperors and by some Colombian chiefs, including the *Chibcha*, may have been merely a form of family endogamy designed to keep descent within the family. Kirchhoff believes that northern Perú also tended to be matrilineal (this volume, p. 295), though the Central Andes seem to have been very definitely patrilineal.

In the social classes, the system of warfare, and the priest-temple cult, these tribes found a new set of factors for governing interpersonal relations. In contrast to the Tropical Forests, the kinship basis was thrust into the background; status came to pertain to class membership rather than to age, and political control fell to the village chief instead of the kinship head. Individualism was greatly curtailed, special associations gave way to warrior groups (the only recorded men's secret society is that of the *Guaymí*), and shamans became functionaries of the temple cult as well as private practitioners.

**The political pattern.**—The Northern Andean and Circum-Carribbean political unit was a group of houses or lineages, and its head was a chief rather than family elder. The office usually was quite strictly hereditary, though in some tribes, for example in Ecuador, a chief was theoretically supposed to have exceptional qualities of leadership, and in some tribes (*Talamanca* Division), chiefs, especially war chiefs, were elected.[3]

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[3] A problem that would repay careful comparative study is the political power and social status of the priests or shamans, the hereditary secular chiefs, and the war leaders. The place of all three in the sociopolitical hierarchy would throw much light on the origin of the social classes.

The village usually constituted the state, but there was considerable tendency to tribal federation and even to the formation of empires or kingdoms. Though political consolidation of groups of villages fell far short of that of the Central Andes, the *Cara* are alleged to have dominated most of Ecuador in pre-*Inca* times. Apart from the *Cara* realm, all the *Puruhá* were under one chief and the *Cañari* were federated under a hierarchy of chiefs. On the coast, the seven *Puná* divisions had an over-all chief, but each *Esmeralda* town and probably each *Manta* town was independent. In Colombia, federations of subtribes to form the tribal political units had made some progress among the *Páez*, *Lile*, *Ancerma*, *Catio* and other Highland tribes, and among the *Quimbaya*, *Tolú*, *Cenú*, and *Mompox* of the North Lowlands. There were also incipient empires that were economic if not political. They were established by conquest and tribute was exacted from the conquered peoples. Among the *Chibcha* and their neighbors, at least two important realms were established (Handbook, 2: 887–897). Northern Venezuela is inadequately known, but considerable intervillage solidarity seems indicated for the *Timoteans*, *Caquetío*, *Cumanagoto*, and *Aruacay*. The *Arawak* of the *Antilles* and the *Guaymí*, the *Talamanca* Division, and the *Güetar* of Central America had also achieved loose states.

**Social classes.**—The class structure really stemmed downward from the chiefs, nobles, or lords, who constituted the most clearly defined class. Usually, several chiefs formed a privileged and more or less hereditary aristocracy of considerable power. Among the Tropical Forest tribes, the main privilege of the chief was that of practicing polygyny. The Northern Andean and Circum-Caribbean tribes accorded chiefs this privilege in greater degree, and the *Puná* and the peoples of the Unaré River in Venezuela are alleged to have had eunuchs to guard the chief's harem. A chief's wives or concubines were so bound to him that they were often interred with him at death. A chief or lord was also distinguished from commoners by occupying the largest and most central house of the village; by having his land cultivated and many other services performed by common folk; by bearing a special title; by wearing distinctive garments, insignia, and ornaments of precious metals, gems, and sometimes pearls; by sitting on a special stool, usually of carved wood; by being carried in a hammock or gold-adorned litter (*Chibcha* and other Colombia tribes, *Caquetío*, Unaré River in Venezuela, Antillean *Arawak*); by receiving obeisance from his subjects; by marrying his sister (*Chibcha*, *Carrapa*, *Picara*, *Paucura*) or his sister's daughters; and by elaborate disposal of his body at death. As many of the special funerary practices can be inferred from archeological data, they afford an excellent clue to the presence of a class system among prehistoric peoples.

Among the Northern Andean and Circum-Caribbean people, the chief's body was: Put in a tomb, seated on a stool (*Puruhá*) and accompanied by his wife (*Panzaleo*); buried with his wives (*Cañari*); buried with wives and slaves (*Chibcha*); buried with wives in a deep-shaft grave (*Pasto*, *Quillacinga*, *Caramanta*, and perhaps several Ecuadorian tribes); desiccated or cremated and buried (*Quimbaya*); mummified and kept or else buried (*Popayán*, *Güetar*); buried in a mound-enclosed vault (North Colombia Lowlands; Cauca-Atrato region); desiccated, placed in a hammock, later cremated, and the ashes drunk (*Caquetío*); desiccated and hung in a house (*Chiribichi*); desiccated, buried, and later roasted or reburied (*Piritú*); disemboweled, desiccated, and kept as an idol or buried with several wives (Antillean *Arawak*); desiccated and kept in a house or buried with wives and retainers (Panamá); or sewed in a mat and buried with retainers (*Mosquito*). Mound burial was probably more common than reported, but it seems not to have been characteristically Circum-Caribbean, and it was not a typical Andean trait. The custom of cremating the ashes and drinking them with chicha occurs among a few Venezuela tribes, but is more characteristic of the Tropical Forests, especially of the western Amazon.

Colombian tribes have been accredited with matrilineal succession of chieftainship, and in view of their strong matrilineal tendency (see above), this is perhaps expectable. The evidence for matrilineal succession is usually that a chief was succeeded by his sister's son, but where brother-sister marriage was practiced, the sister's son was also the chief's son. A chief's marriage with his sister's daughter would also give the superficial appearance of matrilineal succession. True matrilineal succession, therefore, can only be assured where, as in the case of the *Chibcha*, it is specifically stated that the title passed to a nephew rather than to a son.

The aristocratic or noble class was ill-defined and less fixed by heredity than that of the chiefs or lords. It seemingly consisted of lesser chiefs—certainly the chiefs of villages within a federation and perhaps the headmen of lineages within a village—and probably of famed warriors and wealthy persons who achieved their status. Shaman-priests are probably also to be counted in this social stratum. The nobles were neither so fixed by heredity, so absolute in power, nor so neatly subdivided as in the *Inca* Empire. Their privileges resembled those of the overlords in kind—a *Chibcha* noble might have 100 wives—but not in degree.

The commoners must often have been the kin of chiefs and nobles, but they lacked privileges, were servile before their betters, and had to supply cloth and other produce and labor to the upper classes. They probably had some potential upward mobility, however, and could improve their lot through achieving war fame and capturing slaves.

The slaves were war captives, but little is known of their true place in society. Whether they formed an important group of drudge laborers, helping their captors to rise economically, is an open problem. It appears that male captives added to their captor's prestige mainly through affording them victims for sacrificial rites, cannibalistic feasts, and human trophies, and that female captives augmented their masters' polygynous households. Women may also have performed useful economic tasks, but farming in these cultures was the work of both sexes.

**Warfare.**—Circum-Caribbean and Northern Andean warfare was of vital importance to the sociopolitical patterns. It was highly developed, the armies numbering in the thousands and even including women. A few tribes, notably the *Chibcha*, conquered neighboring peoples and exacted tribute, but probably none wholly abandoned the pattern whereby individual warriors gained fame through the capture of slaves and sacrificial victims. The armies were not wholly subservient to the state, as in the Central Andes, where alien masses were incorporated into the empire and became commoners and soldiers.

Warfare afforded an individual four means of attaining rank: (1) The honor of taking war captives for cannibalistic feasts; (2) augmentation of his polygynous household with captive women; (3) the use of titles and the display of insignia and human trophies; and (4) probably the acquisition of some drudge slaves, male and female, who increased his wealth. A *Cuna* warrior received a title for killing 20 victims; *Mosquito* and *Sumo* warriors gained rank and insignia; among the *Bribri*, *Cabecár*, and *Terraba*, they were accorded special burial; and among the *Caracas*, they had a graded military class, with special insignia.

Cannibalism was strongly developed in Colombia (South Colombia Highlands, except the *Páez;* tribes east of the Cauca and of the Cauca-Atrato region), and in Venezuela (*Cumanagoto*, *Marcapana*, *Palenque*). Among the *Caramanta* and tribes east of the Cauca River, it amounted to a definite appetite for human flesh. The *Piritú*, though not cannibals, drank powdered human hearts in chicha. The *Chibcha* and certain Central American tribes sacrificed victims for ritual rather than for cannibalistic purposes, except that the Meso-American tribes were strongly cannibalistic, the *Sumo* were probably cannibals, and *Lenca* warriors ate their victims' hearts. The Antillean *Arawak* did not eat human flesh, though the *Island* and *Mainland Carib*, both of them Tropical Forest peoples, were fierce cannibals.

Correlated with cannibalism was the display of human trophies:

skulls (Panamá, South Colombia Highlands, *Chibcha*, Western Colombia, tribes east of the Cauca); the flayed skin stuffed with ashes or straw, and the hands, feet, and other parts of the body (South Colombia Highlands, Western Colombia, tribes east of the Cauca, *Manta*, doubtfully the *Corbago*). Except for the *Piritú*, who made flutes of human bone, a Tropical Forest trait, the *Timoteans*, the tribes of northern Venezuela, and the Antillean peoples used no trophies. In Central America, the *Sumo* used human teeth.

Warfare was an adjunct to religion in that it supplied victims for sacrificial rites among the tribes east of the Cauca River, the Cauca-Atrato area, the *Chibcha*, the *Cuna*, the *Güetar* and perhaps others of the *Talamanca* Division, and some of the Meso-American tribes. (See also below.)

A little-understood phenomenon is the occurrence of female warriors among many of the Colombian tribes, the St. Croix Island *Arawak*, and probably the *Cuna*. It seemingly had some connection with transvestitism. Male homosexuality, on the other hand, was common on the coast of Ecuador.

### RELIGION AND SHAMANISM

The priest-temple-idol cult of the Central Andean peoples centered around the public worship of tribal gods, who were represented by idols kept in temples, and the worship was directed by a special class of priests. Few Circum-Caribbean and Northern Andean tribes had precisely this pattern. Some tribes lacked almost all features of it, whereas others had a cult that was transitional between the Tropical Forest and Central Andean patterns. The priest-temple-idol cult seems to have been entirely absent from Northern Venezuela and attenuated among the *Island Arawak*. In Central America, some tribes may never have had it, but post-Contact deculturation probably eradicated it among many others, so that its aboriginal presence can only be ascertained by further perusal of the early chroniclers. Certain archeological remains that appear to have been ceremonial centers and many fragmentary beliefs and customs that survive among the modern tribes strongly suggest that a temple-idol cult was formerly present.

In the Circum-Caribbean and Northern Andean tribes, the main religious functionary was the shaman. Like the Tropical Forest shaman, he cured disease, divined, and practiced magic with the aid of his personal spirit helper, but he also assumed the duties of intermediating between the community and its gods. That the same person filled the dual roles of priest and shaman seems clearly evident for many tribes (*Evégico*, *Panzaleo*, *Pijao*, North Colombia Lowlands, Northern and Northwestern Venezuela, and probably *Popayán* and *Ancerma*). In these tribes, membership in the priesthood was not hereditary but depended upon the supernatural experience by which an individual obtained shamanistic power. Through his community services the shaman attained considerable status, and often he had political power equal to that of the chief or he was the chief (Northern Venezuela, *Caquetio*, *Island Arawak*). Thus, priests, like warriors, had a potential upward mobility, and they were not fixed in the social structure by heredity, as in the Central Andes. A few tribes, however, apparently had a special, hereditary class of priests (*Chibcha*, Meso-American tribes, *Bribri* and *Güetar*).

The religious rites were largely private, oracular séances and served the needs of individuals rather than of the community. Public ceremonials were not unknown—the *Chibcha* had a harvest and New Year's rite and an annual pilgrimage—but there was no fixed ritual cycle, associated either with a calendrical system or with agricultural phenomena. The oracular performances resembled the public séances held by Tropical Forest shamans but differed from them in that they dealt with tribal gods rather than with the shaman's spirit helper. The distinction, however, was not always clear-cut: shamanistic, fetish, and guardian-spirit concepts are interwoven with those of tribal gods, and spirits pertained to groups of different magnitudes: tribe, community, family, and individual. The zemis of the *Island Arawak*, for example, were household fetishes of different kinds, some of them derived from dream experiences; only the major zemis, which were kept in the chief's house and were worshiped in communal rites under the chief's direction, can be regarded as idols in a temple cult. Many tribes had household idols, which, though frequently worshiped with supplication and sacrifice, were family, not community deities.

There was great variation in the nature of the community deities, and they must represent the results of several streams of historical influence combined with diverse local patterning. Most common were celestial beings, especially the sun and moon (*Manta*, *Cañari*, *Chibcha*, *Coconuco*, *Carrapa*, *Catio*, northwestern and northern Venezuela, Caribbean Lowlands, *Lenca*). In the Tropical Forests, celestial deities frequently were myth characters and often creators and High Gods, but they were rarely the objects of community worship. The jaguar, another widespread South American supernatural being, attained cult status in some tribes (*Nutibara*, *Fincenú*). The worship of and myth of emergence from sacred places, especially mountains (*Cara*, *Cañari*, *Puruhá*, *Timoteans*), springs (*Manta*), a cave (Antillean *Arawak*), and rocks and trees (*Manta*, *Cañari*) are probably Andean-derived. The *Lenca* pilgrimages to sacred hills may be a vestige of the same idea, which extends to México. The *Chibcha* had shrines to lakes, rivers, mountains, and caves. The nature of many deities, however, is unknown, though the idols representing them are described in detail.

Idols took many forms, such as clay (*Puruhá*), pottery, wood, stone, and thread (*Timoteans*), various materials including three-cornered stones (*Island Arawak*), and most elaborate of all, painted and gold-sheathed images (*Fincenú*, *Ancerma*).

Ancestor worship was probably very general, though the function of the ancestor of the common family is not reported. Deceased nobles and lords often became tribal deities. In the case of the *Chibcha* and Antillean *Arawak*, it is fairly clear that they were worshiped, and in many other tribes it is probable that their remains were mummified, as in the Central Andes, so as to preserve them as community or tribal fetishes or gods.

In the Tropical Forests, the men's club was usually the scene of religious activities, such as initiation rites, séances, and other ceremonies, and it, or a similar, early inter-American men's house, may have been the prototype of the temple. The Northern Andean and Circum-Caribbean peoples seemingly had no men's clubhouses, and, though minor rites might be practiced in family dwellings or before various lesser shrines and major ones sometimes in the chief's house, as among the Antillean *Arawak*, many tribes had a special structure in which the idols were kept and the priest-shaman conducted the oracular sessions and other rites. Offerings were made to idols only in family dwellings among the *Páez*, *Moguez*, *Caramanta*, *Pozo*, and *Arma*, and on the upper Cauca and in parts of Central America. There was a special temple among the *Pasto*, *Timoteans*, *Chibcha*, the Meso-American tribes, and the tribes of northwestern Venezuela and western Colombia. In Colombia and among the Meso-American groups, the temples were sometimes placed on mounds, but they seem rarely, if ever, to have been built of stone, as in the Central Andes. *Chibcha* temples, like houses and palaces, were of poles and mud. Among the tribes of northern Venezuela, the Antillean *Arawak* and probably the *Timoteans*, shamans performed oracular functions in a cave.

Human sacrifice was practiced by many though not all of these tribes—the *Timoteans* and *Island Arawak* had none. It was closely associated with warfare and, in some cases, with cannibalism. The victims seem everywhere to have been war captives, except among the *Manta* and the *Chibcha*, who also sacrificed fellow tribesmen. The purpose of sacrifice was extremely varied; to honor idols and sacred mountains (*Puruhá*); to insure war success (*Pozo*); to effect cures, to insure fertility by offering blood to fields, and to provide hearts to be worshiped as gods (*Huancavilca*); to appease the Sun, especially during droughts, by tying-up the victim, killing him with darts, and cutting his heart out (*Chibcha*, who also sacrificed animals); to obtain ghosts to guard family idols (*Pijao*); to control the weather by offerings of hearts (*Caramanta*); to supplicate the sun for rain with the blood of young girls (northwestern Venezuela); to appease temple idols, the skins of the victims including animals being filled with straw and ashes (*Manta*); to honor burial feasts and each moon (*Güetar*); and to accomplish unspecified purposes (*Arma* and *Quimbaya*, who performd the rite on special platforms; *Picara; Ancerma;* and Meso-American tribes).

Ritual elements link the tribes with various areas. Taking salt (Ecuador) and coca (Ecuador and Colombia) are Andean; burning copal and the steam bath, are Mayan and Mexican; flagellation (*Puruhá*) is Tropical Forest; fasting (*Páez*), hair cutting (*Puruhá*, at girl's puberty; *Panzaleo*, as punishment; *Puná*, as a men's style), and use of tobacco are widespread.

The strictly shamanistic practices of the Northern Andean and Circum-Caribbean tribes are in the general South American pattern, representing beliefs that had considerable antiquity and persisted with great stability regardless of the cultural context they entered. Under the influence of a stimulant or narcotic (tobacco, *Datura*, coca in the Andes, or other drugs according to local species), the shaman used his supernatural power to cure disease by sucking out the object causing illness, and he divined, prognosticated, and worked various kinds of magic. There was also considerable herbal curing.

### TECHNOLOGY AND MATERIAL CULTURE

The basic technologies in handling wood, stone, ceramics, fibers, and metals were like those of the Central Andes, but the manipulative skills were definitely inferior. Despite the quantities of wood available, its stylistic handling was stilted and no vigorous wood carver's art is reported. Stone was little used. In ceramics, where unlimited scope in molding, modeling, and painting would have been possible, the art was confined to narrow plastic traditions and to restricted painting. Few woven products have been preserved, but the textile art seems to have fallen far short of the craft potentialities realized in Perú, the products having a limited range of techniques and designs being painted on rather than woven in. Metallurgy achieved smelting and alloying of gold and copper, but smelting and alloying of other metals and probably many of the Central Andes metallurgical processes were not employed.

**Metals and gems.**—Copper and gold were smelted and alloyed among the *Pasto*, *Páez*, *Moguex*, *Pijao*, and the tribes of the upper Cauca, east of the Cauca, and in Panamá, but copper occurs only rarely again in Central America until the *Maya* frontier is reached. In Ecuador, the *Cañari* had gold, gilded copper, and silver, but only gold and silver are ascribed to the *Esmeralda* and *Manta*. Metal objects, including gold-copper alloys, were traded as far as the Antilles, but smelting seems not to have been practiced by the *Chibcha*, the *Timoteans*, and the other tribes of northwestern and northern Venezuela, perhaps for environmental reasons, though some of them may, like the *Island Arawak*, have worked placer gold.

Several precious stones including emeralds were used from Ecuador to Panamá. Pearls were probably used by most Coastal tribes, including the *Manta*, *Cuna*, and the peoples of northwestern and northern Venezuela.

**Ceramics.**—Pottery reached a high development, mainly in the modeled, incised, and appliqué tradition, wares of this type being found throughout the Sub-Andean and Circum-Caribbean area. Three-color polychrome is mainly Central America and is probably of Meso-American origin.

**Weaving.**—True loom weaving characterized all these tribes, except perhaps a few in Central America and the Antillean *Arawak*, who netted their fabrics. All fabrics were of cotton and other vegetable fibers. Use of llama wool, except that obtained in trade, was post-*Inca* in Ecuador, and use of sheep wool was post-Columbian everywhere. The cotton was generally cultivated, but the *Talamanca* Division and the tribes of northern Venezuela and perhaps the *Island Arawak* used a wild species. Ornamentation of cloth was usually with painted rather than woven-in designs.

**Basketry.**—Basketry appears to have been general, and, to judge by a very few descriptions of the weave, was of the Tropical Forest twilled and woven varieties.

**Bark cloth.**—Though also a western Amazon trait, bark cloth was made in Ecuador (*Pasto*), western Colombia, and Central America.

**Transportation.**—Dugout canoes were used by all coastal and river tribes. The Antillean and Panamanian peoples built huge, highly ornamented craft. The *Manta* used large, sea-going balsas, as well as dugouts.

The carrying basket is ascribed to some tribes, but the netted carrying bag appears to have been more common (*Páez*, Central America, Northwestern Venezuela, *Island Arawak*).

**Gourds.**—The manufacture of decorated gourd containers was a characteristic feature, and in Colombia (*Pasto*, *Moguex*, *Páez*) the gourds were ornamented with a special "*Pasto* varnish."

**Household furniture.**—Like the Tropical Forest peoples, these tribes used hammocks and wooden stools. The platform bed is mainly Andean, but occurs sporadically: *Chibcha*, the Central American peoples, and the *Ancerma*. Among the *Island Arawak*, commoners used platform beds while chiefs used hammocks.

Stone metates and stone stools occurred especially in the Andes and Central America.

**Weapons.**—The bow was used by a few tribes in western Colombia (*Aburrá*, North Colombia Lowlands), the *Timoteans*, some peoples of northwest Venezuela, and most of the Central American tribes. As elsewhere in South America, it seems to have spread at the expense of the spear and spear thrower, with which it had a negative correlation. The spear thrower remained typically Highland in this area; it instead of the bow was found in Ecuador, southern Colombia, among the *Chibcha*, and in parts of western Colombia. It also survived among the Antillean *Arawak* and some peoples of the Venezuelan Andes.

The sling, another typically Andean weapon, was widespread in Ecuador and Colombia, and also survived among the *Aburrá* and on the Island of Trinidad. Stones were also thrown by hand among the *Pasto* and in the Antilles.

Clubs, especially of the flat or macana type, were general. Shields were used in southern Colombia and the Venezuelan Andes (map 5). Axes seem to have had a wide distribution, but they were generally of stone, being made of copper only in Ecuador.

The blowgun was common to the Sub-Andean and Central American tribes, but the latter shot pellets; the poisoned blowgun dart only reached the *Cuna* during historic times.

**Esthetic and recreational features.**—A variety of musical instruments are recorded, the most characteristic and widespread being shell trumpets, flutes, drums, and rattles.

Of stimulants and narcotics, chicha was probably general. Tobacco had a wide distribution (map 9), but it and other narcotics were consumed principally by shamans. Coca, too, was widespread, though its occurrence in Central America and the Antilles is questionable. Natively, it had ritual and shamanistic rather than popular use.

## THE SUB-ANDEAN TRIBES OF EASTERN BOLIVIA

Considerable deculturation of much of eastern Bolivia during the historic period and inadequate data on aboriginal culture leaves in doubt just how many native tribes might be considered Sub-Andean. The *Mojo* (Handbook, 3: 408), *Bauré* (3: 409), *Manasí* (3: 388), *Paressí* (3: 349), and *Paunaca* (3: 396) were Sub-Andean from a sociological rather than material point of view. They formed enclaves among Tropical Forest and Marginal tribes, but, as the archeology of eastern Bolivia suggests considerable cultural development and some Andean linkage at approximately the Tiahuanaco Period of the Highlands, it is evident that the Sub-Andean culture had been partially swamped out and compressed by tribal movements bringing more primitive peoples into the area. All these tribes are *Arawakan*, except the *Manasí*, and they probably moved into the area from the Tropical Forests to the north.

### SOCIOPOLITICAL AND RELIGIOUS PATTERNS

Intensive cultivation of tropical root crops as well as of many domesticated plants derived from the Andes supported a stable though not very dense population. Villages, except among the *Mojo*, were large and comparatively permanent. *Mojo* villages averaged only 60 to 80 persons, though some were larger, but those of the *Paressí* had 10 to 30 large houses, each with 30 to 40 persons, a total of 300 to 1,200 persons per village. Villages were very compact and carefully planned, the chiefs' houses and ceremonial hall standing in the center. *Bauré* villages were palisaded.

**Social classes.**—All these tribes were socially stratified, some more than others. *Mojo* chiefs were probably hereditary, except that shamans often became chiefs. War captives, though allowed to marry into the tribe, were held in contempt and probably ranked below the commoners, but the classes were obviously ill-defined and quite fluid.

The other tribes had the characteristic Sub-Andean class pattern. Among the *Bauré* were: (1) a somewhat endogamous group of chiefs, who were furnished food by commoners; (2) commoners; and (3) a servile class, presumably war prisoners. The *Paressí* classes were: (1) hereditary chiefs, who lived in special houses and were furnished food and other necessities by their subjects; (2) nobles, who were heads of independent families (probably of the communal houses made up of many captive wives) and who controlled drudge slaves; (3) war captives who were serfs or slaves. The *Manasí* had: (1) powerful hereditary chiefs, whose special houses in the village plaza were used as temples and public meeting places, who received homage from their subjects, and who were accorded special burial in a stone- or wood-lined grave; (2) shamans and a distinct class of priests; (3) a nobility made up of headmen (of households?); and (4) commoners. The chiefs of these tribes were not carried in litters, did not receive elaborate burial, and lacked many of the other evidences of status of the Andean and Circum-Caribbean area.

The extent of the political group is unclear. In all tribes, each multilineage or multifamily village had a chief, and among the *Mojo*, two or three villages constituted a subtribe under a chief. The *Paressí* waged wars of conquest, but it appears that these wars incorporated alien groups into the *Paressí* class system rather than created incipient empires or even federations.

**Warfare.**—There was some warfare, especially among the *Paressí*. The capture of men for slaves and women for wives enhanced individual prestige. The cannibalism-human trophy complex of the Circum-Caribbean peoples is not reported, but a kind of substitute is found in the *Mojo* jaguar cult. Jaguar hunting was the, or one of the, main avenues to fame, and jaguar trophies were kept along with other religious objects in the hall which served as men's clubhouse and temple. Human skulls were kept, but these may not have been enemy trophies.

**The priest-temple cult.**—These tribes had temples—in some cases, the chief's house; in others, the men's club—dedicated to cult worship, but in some cases the cult had vestiges of a men's secret society. Shamans, who gained power through individual experiences, served as oracles and priests, consulting and making offerings to the gods. Apparently only the *Bauré* and *Manasí* had a special, hereditary class of priests, but the deities were true tribal or village gods, not mere shaman's spirit helpers.

Among the *Paressí*, the men's club was the temple, and it was dedicated to the serpent god and perhaps other deities. It contained the sacred paraphernalia, including a trumpet, which represented the voice of the gods and was taboo to women—a feature of the Tropical Forest men's secret society. The *Mojo* also used their men's drinking hall, a special structure, as a temple. Taboo to women, it was the shrine of jaguar trophies and perhaps of sacred musical instruments. Here, special shamans consulted jaguar spirits and made offerings to the gods, among them certain celestial and nature deities. Both men and women were shamans, but the women may not have served as priestesses. *Manasí* priests were initiated into their class. They alone entered the sanctuary, which was in the chief's house, to consult and make offerings to the gods, who carried them away. The gods seem to have had some association with the thunder.

## TECHNOLOGY AND MATERIAL CULTURE

The technology of these tribes was preponderantly of the Tropical Forest type, and it lacked such Sub-Andean elements as metallurgy. Cultural elements shared with the Tropical Forests include cotton hammocks, wooden benches, dugout canoes, bark cloth, twilled and hexagonal basketry, good painted pottery, cotton weaving on the vertical loom, Muscovy ducks, bows and arrows, blowguns, spears, rubber-ball game, hollow-log drums, and pole-and-thatch houses. More specifically Andean, perhaps, were: trade in salt; the *Mojo* causeways, which had lateral canals that served as canoe channels (it is quite possible that these antedate the *Mojo* by a long period); balsa rafts; primitive bridges; and slings. The *Mojo* also used bull boats, bolas, spear throwers, panpipes, trumpets, and clarinets.

## THE CENTRAL ANDEAN PEOPLES

The high civilization found in the Central Andes at the time of the Spanish Conquest was that of the *Inca*, and it was coterminous with the area in which the *Inca* culture largely replaced that of the local tribes. One hundred years before the Spanish Conquest, the *Inca* occupied only the immediate vicinity of Cuzco, and the remainder of Perú, Ecuador, Bolivia and North Chile was divided into more than 100 independent states, some of them small tribes, others, groups of tribes forming kingdoms. Each had its own culture (Handbook, 2: maps, 3, 4, 5, 7). The *Chimu* Kingdom of the north coast of Perú was probably an empire, but it did not compare with the final *Inca* achievement. The *Inca* ultimately subjugated all peoples from the Colombian border of Central Chile and incorporated them in a single state or empire. They deeply affected the cultures of Perú and Bolivia, especially the sociopolitical patterns transcending the communities, but they only superficially influenced Ecuador and North Chile. The *Uru*, an insignificant enclave in the Río Desaguadero-Lake Poopo region of Bolivia (Handbook, 2: 575), remained quite primitive. The *Inca* culture, in other words, was imposed on the peoples of the continuous mountain mass of the Central Andes, while beyond, to the north and south, where the Cordillera begins to fork and breaks into smaller blocks, considerable cultural diversity persisted.

The Central Andean culture brought into sharp focus the patterns foreshadowed among the Sub-Andean and Circum Caribbean tribes. Intensive farming and herding supported the most dense population and the largest and most permanent communities in South America, and it yielded a surplus which released large portions of the population for manufacturing and for governmental, religious, and other non-survival assignments. Social classes became hereditary, endogamous castes, but the nobility rested on a large base of wealth-producing commoners rather than on a slave class. Warfare was an implement of imperialism instead of a source of slaves and ritual victims, as among the Sub-Andean and Circum-Caribbean peoples, and, though commoners could improve their condition through war exploits or by becoming special artisans, they could not rise to a higher caste. Religion was organized around a state temple cult and a hierarchy of state and local gods, and it was served by a graded priesthood, the priests being clearly differentiated from shamans, who were curers and magicians. The whole society was highly regimented through a code of laws and regulations which were enforced through a judicial system, and little was left to tribal custom with its less overt sanctions.

In agriculture, herding, road building, megalithic construction, metallurgy, weaving, and in achievements in government, conquest, and class organization, the *Inca* surpassed anything in the New World. In intellectual attainments, however, and in esthetic achievements, except in pottery and textiles, they fell far short of the *Maya.* They had no system for writing words or sounds, and they recorded numbers only with knotted strings, or quipus. Their graded hierarchy of deities lacked the refinements of the Mexican pantheon, with its esthetic concomitants in ritual, architecture, and religious art. Their ceremonial calendar, based on a simple adjusted lunar count and ignoring even solstices and equinoxes, did not compare with the carefully calculated day counts and other means by which the *Maya* reckoned time.

The main difference between the *Inca* and the *Maya* is that the former intensified warfare and conquest to create an empire dominated by political and social organization, whereas the *Maya*, a comparatively peaceful people, developed their temple cult so that an esoteric priesthood became the leading class and life revolved around ceremonial centers. Highly developed religious art, architecture, and ceremonialism and a refined calendar marked the peak of the *Maya* achievement. Probably both trends were implicit in the Circum-Caribbean culture.

### THE ECOLOGICAL BASIS

Andean farming was the most intensive in the Hemisphere. It employed vast irrigation works, terracing on steep hillsides, and use of fertilizers. More than 30 different species (Handbook, 2:5; 6: Sauer) and innumerable varieties of plants were cultivated; of potatoes alone there were scores of varieties. Llamas, alpacas, guinea pigs, and ducks were tended. Local specialization according to the environmental zones of the Andes (about one-third of the crops were Highland specialties) coupled with considerable exchange of produce gave a varied as well as abundant food supply. Wild foods were of minor importance, except for fish on the coast and fish and birds in the Lake Titicaca-Río Desaguadero region.

The efficiency of Andean agriculture is evidenced by the large population, which was the most dense in South America, and by the surplus production. The latter was insurance against want and released people for other work. Although the land was worked by commoners, only one-third of the produce went for their keep, the other two-thirds going respectively to the state and church, whose members did not engage directly in material production. Moreover, vast numbers of commoners were taken from their fields for military service, special craft production, household service, and labor on roads, bridges, buildings, and other public works. It is said that 30,000 persons were used in the construction of the fort at Sacsahuaman and that the emperors sometimes had difficulty in inventing projects to keep people busy.

Extensive movement of produce and goods was made possible by the use of large, seagoing balsa rafts on the coast and of pack trains of llamas traveling over an excellent system of roads in the interior (Handbook, 2:229). This efficient transportation, an important factor in the development of urban centers, surpassed anything in the remainder of South America, where goods were moved in pre-Columbian times by human carrier, or by dugout canoes, as along the Amazonian waterways and on some of the coasts. The post-Columbian horse of the Pampas was probably of great efficiency, but the population and economic surplus of this area was insufficient to support large and elaborately structured aggregates of people.

## SOCIOPOLITICAL AND RELIGIOUS PATTERNS

**Settlement pattern and composition.**—The combination of productive and transportational efficiency in the Central Andes gave considerable latitude to the settlement pattern: people could live either dispersed over the countryside or concentrated in urban centers. Archeology has shed very little light on settlement patterns, not for want of data but because of preoccupation with other problems. Chanchan on the north coast (Handbook, 2: pl. 51) is an extraordinarily large, compact, planned urban center, covering some 11 square miles. Possibly the restriction of settlement areas on the coast to the narrow confines of irrigated valleys, which are bounded by stark deserts, predisposed valley and coastal communities to strongly nucleated types. The Highlands, dependent on rainfall more than irrigation and given over to considerable herding, allowed more dispersed settlements.

The cultural factors which operated within the ecological limits to determine the size, composition, and distribution of communities are partially evident from ethnographic data. The unit settlement of the Highlands was a compound enclosing as many as six houses of stone, stone-and-adobe, or adobe, grouped around a court. Each house sheltered a biological family and the compound apparently accommodated an extended, patrilineal family (Handbook, 2:223). In pre-*Inca* times, the compounds were irregularly clustered around ceremonial and administrative centers to form unplanned villages, which rarely included more than 300 families, or about 1,500 persons. The villages, located near but not on arable land or grazing areas, were not fortified, refuge being sought in hilltop forts.

The *Inca* set out on a deliberate program of (1) creating new administrative and ceremonial centers and (2) moving villages away from the old hilltop forts to sites nearer the fields. The new villages and cities, planned by government architects, were ideally laid out in squares, each with one to four extended-family, unit-type compounds or enclosures. Except for capital towns, however, the new settlements were little larger than formerly. Cuzco attained great size, but a considerable portion of the 100,000 inhabitants of the valley were scattered in small villages, separated from one another by farm lands.

The ayllu, a much-discussed social and territorial unit (Handbook, 2:253, 483, 539; this vol., p. 293), seems to have been essentially a land-owning group consisting of one or more villages and having a myth of common origin for its members. The land, at least under the *Inca*, was distributed annually to the constituent families. The ayllu cannot have been a clan as defined herein, because it consisted of many lineages or extended families which were probably related only through marriage, because marriage was endogamous within it, and because kinship terms reflect a bilateral kinship structure. The ayllu was patrilineal only in that office was so inherited; group affiliation in an endogamous group is necessarily bilateral. In pre-*Inca* times, the ayllu often seems to have constituted a politically independent tribelet, which was constantly at war with its neighbors, but some tribes consisted of several ayllus. Under the *Inca*, and perhaps before, the ayllus were grouped into twos (moieties) and sometimes threes for administrative purposes (Handbook, 2:255, 262). The *Aymara* moiety, however, is now and perhaps was in Conquest time an endogamous territorial division of a community within the ayllu (Handbook, 2:541).

These population groupings of different magnitudes—community, ayllu, moiety, and state—gave the individual a set of ever-larger spheres of interpersonal relations that extended far beyond his kin. Within this enlarged framework, his behavior was governed by a complex set of behavior patterns, which were adjusted to the vertically graded positions in the hereditary class system as well as to his kin. Many of these patterns were sanctioned by law. The graded system, which patterned military and religious as well as civil institutions, is reflected among the Sub-Andean and Circum-Caribbean tribes and it was foreshadowed among some pre-*Inca* Andean peoples, especially the *Chimu*, but it developed in full strength under the *Inca*, who imposed it on all the peoples from North Perú to southern Bolivia and who somewhat modified the peoples even farther to the north and south.

**Classes and government.**—Before the *Inca* conquest, the Andes surely had social classes with a hereditary tendency, but status, at least in the smaller groups, could also be achieved through warfare. The expansion of the *Inca* state created an elaborate and rigidly fixed society throughout the Empire. Starting in the vicinity of Cuzco with a sociopolitical system probably not very different from that of their neighbors, the *Inca* expanded during the century before the Spanish Conquest and subjugated tribe after tribe, incorporating them into their own scheme. The *Inca*, especially the direct descendants of the Emperor, became the dominant group and highest caste, but the chiefs and nobles of conquered peoples were also given high status in the realm. Commoners generally remained such. Unlike the Sub-Andean and Circum-Caribbean peoples, among whom the status of the nobles seems to have depended partly upon a captive slave class, the *Inca* nobility was supported by the commoners, who tilled the third of the land set aside for the state and performed other services. In other words, conquest incorporated wealth-producing commoners within the realm rather than adding a captured slave class to the bottom of society, where there was really no place for it.

(1) The state was headed by the *Inca* Emperor, who had absolute authority in all civic affairs and was considered a divinity. The later emperors were so exalted that they married only their full sisters. The Emperor lived in a splendid palace, wore special garments and ornaments, bore a title, was carried in a litter, and sat on a stool atop a throne while attendants sheltered him with a parasol and fanned him. People paid him obeisance according to elaborate rules. He had many wives and servants. At his death, the members of his retinue were made drunk and killed by strangulation. The Emperor's body was mummified and placed in a shrine. Deceased *Aymara* chiefs and nobles were placed with their wives, llamas, and other property in stone towers (chullpas).

(2) The nobility consisted of (*a*) the descendants of past *Inca* emperors and special persons called "*Inca* by privilege" and (*b*) the local curacas or chiefs. The *Inca* nobles were divided into 11 ayllus, each the patrilineal lineage of an emperor, and they had the highest rank, held the most responsible positions, and were accorded many honors comparable to those claimed by the Emperor. The curacas were made up of local chiefs and nobles, who had held power before the *Inca* conquest, and of certain provincial rulers who, though appointed originally for their ability, were given permanent and hereditary status. The nobility became an elaborately graded hierarchy, the upper levels approaching the Emperor in status and the lower standing little above the commoners. There was little possibility of upward mobility because the system became fixed, but degradation of rank could occur as generations became more remote from high-ranking ancestors. This degradation was somewhat checked, however, not only by class endogamy but by intrafamily marriage, the Emperor taking his full sister as his principal wife and the nobles their half-sisters, although both took additional wives or concubines from the commoners. These mar-

riages in violation of incest regulations may have been a fairly old Andean custom, designed to protect a hereditary chief's class, for such marriages occurred north to Colombia.

(3) The commoners formed a fairly homogeneous group. They could improve their status only through warfare, in which they captured additional wives or for which they were rewarded with property and women, thus distinguishing them from the ordinarily monogamous commoners and giving them benefits nearly equal to those of the lower nobles (this vol., p. 298).

The commoners produced their own sustenance on the third of the land allotted them and cared for their own wants, but they were not permitted to make luxury goods. The extended family lived in its compound, preferably near its ancestor's mummy, but, unlike the nobles, the commoners rarely traced their forebears beyond the grandfather. Their daily life centered in the activities of the ayllu and community (Handbook, 2: 483).

The commoners were obliged to supply produce for the *Inca* church and state from the lands set aside for them, to do "mita" labor on public works, to serve in the army, to provide domestic help for the nobles, to supply the "Chosen Women" as wives or concubines for the nobles and as nuns for the convents, and to work as special artisans for the Emperor. In the absence of an important slave class, they performed all the basic and menial labor as well as a few of the more skilled tasks.

**Warfare.**—In pre-*Inca* times, most Andean warfare probably resembled that of the Sub-Andean and Circum-Caribbean tribes in that its purpose was plunder, revenge, and the taking of women, slaves, sacrificial victims, and human trophies. Cannibalism had probably been abandoned, if it had ever been practiced; it is accredited to only the *Aymara*, who roasted and ate their captives and drank their blood (Handbook, 2: 548).

The objective of *Inca* warfare was to incorporate conquered territories into the Empire. For purposes of exploitation, it was more expedient to leave the populations intact and exact labor and tribute from them than to bring them into the *Inca*'s already crowded lands as a slave population. The *Inca* governmental and class system was imposed upon the provinces, and, though whole populations might be moved from one region to another to prevent rebellion and to speed acculturation as far as possible, the pre-existing class structure was retained.

The early phases of the conquest quickly elevated the *Inca* proper to the upper nobility. As the conquest progressed, however, the commoners, who served in the great armies, profited little. Their role as the main wealth producers was fixed by law and their rank was fixed by heredity, so that their main rewards consisted only of extra wives, a small amount of property, and a few favors.

After the Empire had become consolidated and the socioeconomic system functioned to supply the nobles with all the goods and services they desired, warfare was carried on more and more for the sheer power and glory of conquest and as a religious crusade to impose the *Inca* cult on the Andean peoples.

Human war trophies, apparently a very old Andean trait, were still displayed under the *Inca*—skull cups, ash- and straw-stuffed skins, leg-bone flutes, skin drum-heads, and tooth necklaces. Presumably these were evidences of individual prowess. There was no cannibalism, and animals rather than human beings were ritually sacrificed. The few human sacrificial victims were taken from the Empire population rather than from war captives; the sacrifice of war captives seems to have been restricted to victory celebrations.

**The government and society.**—The *Inca* Empire introduced to the Central Andes a state culture over and above the local or folk culture, and a system of control through state law which was probably only slightly evident among the Sub-Andean and Circum-Caribbean peoples and was entirely unknown among tribes whose sociopolitical unit was the kin group. This system resulted from the need to weld together a tremendous and farflung population and to make it serve the conquerors.

Under the *Inca*, the conjugal and extended family remained, but age became a basis for assignment to government tasks and the kin head was superseded politically by a government appointed ruler. The ayllu and moiety became administrative units. Men's clubs and other social groups apparently were unknown. Birth customs probably were not greatly altered, and girls were isolated at their first puberty, but boys' adolescence was celebrated by what appears, at least in the case of the nobles, to have been an initiation into a warrior status. At puberty, all boys received a breechclout and new name; in the case of noble youths, llamas were sacrificed and the boys were whipped, made to race, and given earplugs and weapons. Games were a characteristics feature of mourning ceremonies. Local worship, with its shrines, deities, spirits, magicians, and curers, was not abolished, but the state religion was forced on all communities.

In the greater part of their behavior, the commoners were regimented by government decree. They were counted, classified, graded, and assigned to groups ranging from 10 upward in a decimal system. They had fixed obligations to serve in the army, work for the noble class, and lend their services to innumerable government projects. They learned to speak *Quechua*, the *Inca* language. They were forbidden use of the distinctive garments, insignia, objects of precious metals, and other privileges reserved for their betters. Even their marriage was regulated, and their very lives were at the disposal of the Emperor. A large portion of their behavior was governed by the legal code, which applied different principles to the different classes.

The Empire was kept under control by large armies and garrisons, a system of couriers who carried messages and supplies over the roads, large numbers of census-takers, overseers, and the like, and a judicial system.

**Religion and the temple cult.**—Prior to the *Inca* conquest, local religion had been based on belief in various tribal gods and the spirits of sacred places. There were shrines and perhaps true temples, and probably there was some kind of priesthood. The conquest imposed *Inca* religion, with its temples, idols, priesthood, and system of ritual on the local groups, but did not entirely destroy the local worship, which remained in the same general pattern as that of pre-*Inca* times. It served mainly to create a hierarchy of gods, to introduce more elaborate temples and more ambitious rituals, and to establish a large, graded priesthood.

Under the *Inca*, the deities and other objects of worship were ranked in order of importance: Viracocha, who was the Creator, Supreme Being, and culture hero, and whose servants were the other gods; the Sun, ancestor of the Emperor; Thunder, the weather god; the Moon; various stars; the Earth and Sea; huacas or shrines, such as tombs, buildings, and sacred places, especially springs, stones, and mountain peaks; and amulets and images, probably including those representing individual guardian spirits. These range from national gods down through ayllu and community deities to household and personal spirits. There were also various evil spirits.

The temples housed images of the gods, religious paraphernalia, priests, and the sacred women, but the ceremonies themselves were held out-of-doors.

The priesthood, headed by a close relative of the Emperor, at times may have rivaled the civil authorities in power (Handbook, 2:298 ff). Under the high priest were the priests in charge of the various temples, their importance varying with that of the temple, and under them were a great number of assistants.

Ceremonies were held according to a ritual calendar (Handbook, 2:471). Most common rites were agricultural, but some honored the various gods and others were held against sickness. Special rites were performed in times of crisis. Under the leadership of the priests and their assistants, the gods and supernatural powers were propitiated with blood sacrifice, prayers, fasting, and offerings of coca, sea shells, chicha, and other things. Sacrifice was usually of llamas and guinea pigs, but in times of crisis children were strangled and their hearts offered to the god. Similar ritual was used in a smaller degree for the lesser spirits and shrines, to which anyone could make prayers, offerings, and the like.

Personal sins were believed responsible for sickness and misfortune, and a task of the priests was to confess sinners and impose penances.

In addition to the use of shrines and idols as oracles, divination was practiced by sorcerers, who communicated with their spirit helpers, made spirits speak from fire, examined lungs, seeds, or coca, observed the movements of birds or animals, and interpreted omens and dreams.

It would seem that shamans, that is curers and diviners, were distinct from priests. Among the *Inca*, curers obtained power from a vision of a spirit helper or through rapid recovery from disease. Disease was thought to be caused in several ways: punishment by the gods for sin, sorcery, winds, evil forces, and soul loss brought on by fright. The concept that sin causes disease represents a socialization of more primitive taboo transgression theories. The state was a socioreligous structure, with a divine Emperor at its head, and social offenses became also religious, disease-causing transgressions. (See Ackerknecht, this volume, p. 633 ff.) Disease was manifest as a foreign object in the body, displaced organs, or a toxic condition. The curer sacrificed to his visionary power, divined the cause of the illness, prayed and sacrificed to the Sun, heard confessions, prescribed the penance or procedure the patient should follow, and finally sucked out the object, rubbed the body, or used other appropriate means.

Modern *Aymara* curers do not have spirit helpers; they are persons who have been struck by lightning or who have learned their art. They practice both black and white magic.

Andean ritual elements included fasting, praying, offerings, blood sacrifice, washing (*Aymara*), use of chicha and coca, the concept of sacred directions, and three as the ceremonial number.

## TECHNOLOGY AND MATERIAL CULTURE

The Central Andean peoples were distinguished from the remainder of South America by the number of processes they employed in manufactures and by the quantity and quality of their production rather than by essential technologies. They are also distinguished, especially from the Marginal and Tropical Forest peoples, by the specialization of production and consumption according to the social and political system. Simple goods and buildings were used by everyone, but most of the finer constructions and craft products were destined for the government, priesthood, and nobility.

**Building arts.**—The finest construction of the Central Andes was devoted to public buildings—palaces, temples, warehouses, and forts built of carefully dressed and skillfully laid stones. Construction employed lintels, small corbelled arches, columns, and occasionally two and three stories. Commoners' homes were small, one- or two-room, stone or adobe houses. The stone-faced agricultural terraces, the tremendous system of irrigation canals and ditches, and the canalized rivers were all community works. So were the paved and graded roads which ran throughout the Empire, crossing chasms on suspension bridges and swamps and rivers on pontoons.

**Metallurgy.**—The Central Andean peoples differed from those of the Sub-Andean and Circum-Caribbean area in that they not only smelted and alloyed gold, silver, and copper but they used platinum, mercury, lead, and arsenic and made various alloys, including bronze. They also employed a larger number of metallurgical processes (Handbook, 2: 246–248). The art products and ornaments of precious metals were intended mainly for the nobility, but, in contrast to other American Indians, there were many metal utility objects which anyone might use, for example, knives, axes, bolas weights, clubheads, mirrors, needles, bells, crowbars, and tweezers.

**Weaving.**—The people of the Central Andes had three types of true loom—horizontal, vertical, and belt—and they were the only aboriginal people in the New World to use wool on an important scale. In addition to domesticated cotton, they wove with llama, alpaca, vicuña, and bat wool. Their textiles are unequalled for their fineness, number of techniques, and variety of woven-in designs. The finer ornamental products were made by special artisans for the nobility.

**Ceramics and containers.**—The pottery art was no less outstanding than the textile craft, for the Central Andes have yielded wares of all known American techniques—molding, modeling, and other plastic treatment, negative painting in three colors and polychromes in as many as 11 colors. The *Inca* ware, reflecting standardized mass-production, fell short artistically of earlier ceramics, but technologically it equalled any of them.

The Central Andes is also notable for its carved and lacquered wooden cups and for its painted gourds.

**Basketry.**—Basketry is little known; apparently the Indians devoted the greater part of their attention to ceramics. Twined, twilled, and coiled baskets are all known archeologically and may have been in use at the Conquest. Coiling is still used by the *Aymara.* Mats were also woven.

**Weapons.**—Central Andean weapons seem to have changed little throughout the archeological history of the area, perhaps because they were adapted to open country. Hunting weapons included slings, bolas, nets, snares, nooses, and clubs. The bow and blowgun were absent at the Conquest. In warfare, spears and spear throwers were used for preliminary attacks, but they were superseded in the Highlands by the sling and bolas. For close fighting, star-headed clubs of stone and metal, macanas, and copper or bronze axes were wielded. Protective devices included quilted-tunic armor, slat shields, and helmets. It is difficult to see why the bow was not used. Suitable bow wood cannot be had in the Andes, but presumably it, like many other products, could have been obtained in the Montaña.

**Transportation.**—Effective transportation was provided on the north coast by sea-going balsa wood rafts that carried 50 men and were propelled by sails and paddles, and on the south coast by inflated seal-skin rafts. In the interior, human carriers, who used square clothes slung on their backs, and llamas, which could bear 100 pounds, transported goods over the roads.

**Household furniture.**—Houses were equipped not only with cooking utensils and other articles, but they had wooden stools, those of the nobles being elaborately carved. People usually slept on the floor, though the platform bed may have been used in some regions. The hammock was unknown except as an occasional substitute for the litter in which to transport nobles.

**Clothing.**—The basic garments for men were a breechclout, sleeveless tunic, cloak, leather sandals, and head band, and for women a long dress, a mantle pinned at the chest, sandals, head band, and head cloth. Details of dress indicated class status. Bracelets and necklaces were worn, but lip and nose ornaments seem not to have been common; earplugs were used by the nobles. There was some head deformation but it seems to have been a trait of local custom, not a mark of class; it also occurred in early times.

## ESTHETIC AND RECREATIONAL ACTIVITIES

In esthetic and recreational activities it appears that many of the refinements were associated mainly with the nobility and the church. Art manifestations were principally on containers, ornaments, and textiles, which embellished the persons or buildings of the noble and priestly classes. Chicha was a libation and a ceremonial drink as well as a beverage of popular consumption, coca was used especially by the nobles, priests, and diviners, and even tobacco and *Piptadenia columbrina*, another narcotic, were probably employed exclusively for religious purposes.

Musical instruments, though perhaps used by commoners for their own enjoyment, were employed mainly for military affairs and religious festivals. These included end-flutes; bone flutes; plug flutes; panpipes; trumpets of shell, of wood, and of gourds; tambourines; two-headed drums; metal bells; and shell rattles.

Games were little developed, except dice games, which were the occasion for betting. A ball game and various athletic sports and contests were common, and children played with a number of toys, including tops, which were whipped.

Literature in the form of ballads, created by bards serving the nobles and priests, and secular plays contributed to the entertainment of the upper classes.

## THE HISTORY OF SOUTH AMERICAN CULTURES

### THEORETICAL CONSIDERATIONS

In the theoretical approach to problems of American culture history there are important differences between those who postulate that the principal Indian cultures originated in the Old World and those who hold that they were indigenous, New World products.

Theories deriving Indian cultures from outside the Western Hemisphere range from sensational accounts of the wholly imaginary "lost continents" of "Mu" in the Pacific and "Atlantis" in the Atlantic to more plausible treatises claiming that basic cultures and civilizations were carried by trans-Pacific migrations from China, Indonesia, India, or the Near East. Some writers claim only that individual culture elements reached the shores of America from overseas.

The "lost continent" theories do not merit consideration. Some of the other theories have perhaps received more attention than they deserve, but interest in them is kept alive by our still very insufficient knowledge of early American developmental stages, which challengingly has been used as proof that they are to be found outside America. Among the more influential and serious writers are Elliott Smith (1929) and Perry (1926), who derive New World civilizations from Egypt; Graebner, Schmidt, and their followers, who postulate that a series of kulturkreise, or cultural strata, each a more advanced cultural stage, were brought from the Old to the New World; and Rivet, who has attempted to show the trans-Pacific affiliation of certain Indian races, languages, and cultures. (See Schmidt, 1913; Rivet, 1943.)

These theories, especially the kulturkreise, assume: (1) that cultural classification based on Old World data are valid for America, and (2) that each culture consisted of a complex of political, social, and religious institutions, economic activities, and material elements, which diffused as a whole though the cultures interblended subsequently. A corollary though unstated assumption is that the American Indian lacked the capacity to create what are assumed to be fundamental features of culture. They pay comparatively little attention to the relative chronology of Old and New World culture history, or else they assume dates for the latter which cannot be proved, and they ignore geographical and cultural barriers to culture diffusion.

American scholars find that these theories are too deductive and a priori.[4] Concerned for two generations with intensive field work, they have preferred to classify Indian cultures in terms of New World, not Old World, data. Schmidt's primitive cultural stratum of Food Gatherers, for example, is meaningless for America because, as we have seen, the Marginal peoples are highly diversified and have little in common with one another. His farming, mother-right stage, when woman were cultivators, simply does not fit the Tropical Forest peoples, who were overwhelmingly patrilineal. The assumption that herding was associated with male dominance is not valid for the Andes, for it would be a complete misunderstanding of Andean culture to suppose that llama herding was at all comparable to Old World cattle raising and that it accounted for patrilineal tendencies in the Central Andes. Similarly, any theory that classifies New World civilizations with those of the Near East ignores the vital differences in culture patterns and element content.

The New World cultures not only differed from those of Africa and Asia, but they differed from one another in complex ways. Most particularly, the elements and patterns had very different distributions and, inferentially, different histories, so that the problem is not to trace total cultures through time and space but to ascertain the history of each element, element complex, and pattern. American anthropologists, therefore, deal with each on its own merits. Approaching the problem empirically, they study the manifestation of each cultural feature in specific situations before theorizing about its broader time-space relationships, and they prefer to reconstruct local segments of history before constructing world schemes. They have been unwilling to concede that the American Indian was wholly devoid of inventiveness, and they insist on examining the data of archeology for evidence both of local development and of the relative Old and New World chronology of features shared by both hemispheres. They ask for concrete proof of how migrations could have occurred and how geographical barriers were overcome, especially in the period before ocean travel developed.

Few American anthropologists deny the possibility of transoceanic influence on New World cultures, though most of them repudiate the theories that bring total cultures from overseas. It is conceded that individual elements and even groups of elements may have been imported, though absolute proof is difficult to produce in any single case. At one extreme are features such as matrilineal descent, moon worship, moieties, megalithic monuments, agriculture, or writing, which are not really culture elements or patterns but classificatory labels. To derive phenomena with such labels in America from similarly tagged Old World phenomena would be to ignore the realities of culture. At the other extreme are certain American domesticated plants, whose identity and genetic connection with Old World species can be established beyond reasonable doubt. On botanical evidence, the pre-Columbian occurrence in American and the Old World of sweet potatoes (Maori varieties), an edible root (*Pachyrhizus*), calabashes (*Lagenaria*), north Peruvian cotton (*Gossypium*), plaintains (*Musa paradisiaca normalis*), and perhaps peanuts and coconuts indicates a diffusion from one hemisphere to the other. Between these extremes are a very large number of dubious cases, which involve subjective judgments and which have entailed considerable controversy. (See Dixon, 1928.) Whether these elements are attributed to a single world origin or to multiple origins depends upon one's opinion concerning their uniqueness and man's inventive capacity. Some elements, such as thatched, frame houses, penis covers, or crutch-shaped paddles, would seem simple enough to have been invented several times. Others, such as the blowgun, bark cloth, panpipes, chewing lime with a narcotic, star-headed clubs, trepanning, the venesection bow, and the ikat weaving technique, might be argued with some plausibility to have been invented only once, but it would still be necessary to prove that they were earlier in the Old World than in the New World and to show how they could have reached America. A good many of them might have been introduced to America by individual boatloads of voyagers in the course of settlement of the Polynesian Islands during the Christian Era. It is somewhat more doubtful that voyagers reached the shores of America in the earlier milleniums, when the American civilizations were taking form.

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[4] For further methodological analyses see Cooper (1941), Lowie (1937), and Dixon (1928).

The history of these many moot items, however, is not very important to an understanding of the development of American cultures, for, as has been shown previously, they occurred largely irrespective of the main cultural patterns, all of which developed in distinctive American traditions. The patterns found among the Marginal peoples clearly stemmed from local adaptations beginning in early post-Glacial times, before trans-Pacific navigation was conceivably possible. Those of the remaining tribes, including the civilized peoples of México and Perú, acquired distinctive American patterns at a very early time. They developed along with the cultivation of the more than 100 native American crops on which they were based, and these crops required centuries if not milleniums of plant breeding. None of them, except the few plants mentioned above, came from the Old World, and it can hardly be conceived that the idea of agriculture lay dormant in Indians during hundreds or thousands of years while they migrated from the agricultural areas of the Eastern Hemisphere across Siberia, Alaska, and southward into temperate America. Our present ignorance of the formative beginnings of these civilizations is not proof of their Eastern Hemisphere origin; it simply means that, until recently, attention has been accorded their elaborate manifestations, not their primitive origins.

American anthropologists, though in general accord in minimizing the importance of transoceanic influences on American Indian cultures, disagree somewhat on problems of the time and place of cultural origins within America and the directions of cultural diffusion. Their principal methodological tools have been the culture-area concept, the age-area hypothesis, and archeological sequences. All the tribes in a culturally homogenous area are held to have derived their culture from the same source, which is assumed to be the place with the greatest complexity of structure or with the greatest element content and which is known as the culture center. The age-area hypothesis holds that, other things equal, the oldest cultural features are those having widest distribution. Where a distribution is interrupted, it is assumed that where the features are absent they were superseded by other features. Archeology affords verifiable culture sequences, but these are usually in terms of culture elements rather than patterns, which are more difficult to abstract from its data.

For the New World as a whole, the following history is generally accepted by American anthropologists. As the oldest and more elaborate cultures based on farming are found in México and the Central Andes, it is believed that one of these areas was the center of origin of an early, ill-defined, Formative Period culture from which the main complexes and patterns found among all farming tribes were derived. During subsequent development, both México and Perú became specialized as secondary centers. What might be called tertiary centers developed in many places, such as the Southeastern and Southwestern United States, the Circum-Caribbean area, the Southern Andes, Northwest Argentina, and the Amazon Basin. When similar culture elements and patterns are found among farmers at the northern extremity of the farming area in North America and the southern extremity in South America but not among intervening tribes, the age-area hypothesis would hold that they are survivals of what was present during earlier periods in the culture centers and throughout the intervening areas. The hunting and gathering, or Marginal, peoples located beyond the agricultural tribes in both continents are assumed to represent survivals of an earlier, preagricultural period that was also once pan-American.

The difficulty with this methodology is that sociopolitical patterns are treated as if they were comparable to culture elements and as if they occurred irrespective of the cultural ecology of each area. Certain ornaments, ritual details, items of material culture, social usages, and many other elements did occur in very different cultures and environments and their antiquity may be roughly estimated by the age-area hypothesis. The history of sociopolitical patterns, however, cannot be reconstructed by any such reasoning. Many of these patterns were the result of ecological adaptions to local environments as much as of historical influences and tradition. At one extreme, the sociopolitical structure of the group seems to have grown very directly out of the interaction of subsistence habits, settlement type, settlement composition, and socioeconomic activities. At the other, where the ecology afforded potentialities for a variety of patterns, the tribes were more susceptible to historical factors and the age-area method may be used within limits to ascertain the succession of sociopolitical patterns.

Applying the age-area hypothesis to American data, it can be shown with reasonable certainty that the Marginal tribes of both North and South America had certain elements, such as flint chipping, and certain institutions, such as crisis rites and shamanism, which were the heritage of a primordial period. Some of these retained a pan-American distribution; others survived only among the Marginal tribes and were superseded elsewhere. None of the dozens of different sociopolitical patterns of the Marginal peoples, however, was the survival of a primordial pattern and, therefore, antecedent to the Tropical Forest, Sub-Andean, or Central Andean patterns. Simple patterns, such as those based on kin groups, unquestionably preceded more complex ones, such as those including both kin groups and social classes, but the specific nature of the earlier forms cannot now be reconstructed with certainty by any method. Thus, in terms of sociopolitical patterns, the Marginal tribes represent neither a cultural type nor a cultural stage, but rather a class of tribes which had in common only the lack of the distinctive patterns of the remaining peoples. It is only in terms of certain technologies, material elements, and isolated ritual and social usages that they can be said to retain a primordial culture.

Where the combination of environmental potentialities and subsistence techniques allowed considerable latitude in the development of sociopolitical patterns, the age-area hypothesis is more useful in reconstructing the history of these patterns. Both the Andes and the Circum-Caribbean area, for example, had an efficient economy, a dense population, and large population centers. As certain patterns are found in both, it is reasonable to assume that the simpler forms of the Circum-Caribbean area were derived from the more complex ones, like those of the Andes, and, though the former were somewhat adapted to local environments, they retained many features found in an earlier period of the Andes. This earlier period culture, in fact, probably extended from the Andes to the Mexican and *Mayan* areas.

The following pages will sketch the outlines of South American culture history from the earliest periods to the Spanish Conquest. Evidence on the antiquity of man in America is drawn principally from North America, where the record is better known. The earliest culture will be reconstructed from archeology and, so far as the age-area hypothesis is applicable, from ethnography. The development and spread of the cultures based on farming will then be traced. A subsequent section will outline post-Conquest changes among the Indians.

## ORIGINS OF NEW WORLD CULTURES

### RACIAL ORIGINS

Racially, the American Indian is predominantly Mongoloid. He is, therefore, most closely related to the peoples of Asia and was probably derived from Asia by way of Bering Strait. Some anthropologists have seen Mediterranean, Melanesian, and other non-Mongoloid strains in the Indian. This thesis cannot be disproved, but, unless it be postulated that these strains came from comparatively recent arrivals, it involves a genetic assumption that is difficult to defend: that several racial prototypes could intermix for hundreds if not thousands of years and the genes subsequently segregate out in the original combinations, a chance of one in thousands.

Though predominantly if not entirely Mongoloid, the Indian was extremely variable in head form, stature, and other characteristics. (See McCown, Stewart, and others in volume 6 of the Handbook.)

### ANCIENT MAN

Many authors claim to have found evidence of ancient man in the Western Hemisphere, but few claims have withstood all criticism. The evidence is usually of three types: (1) typological, New World artifacts being accorded an antiquity comparable to their Old World homologues; (2) association of human remains with locally extinct fauna or flora; and (3) human remains dated in terms of geological, especially glacial, chronology.

Mere typological evidence has been generally rejected. Lithic types, which have been accredited with an antiquity comparable to their first appearance in the Old World sequence—usually a period of the Paleolithic but according to some, even the "Eolithic"—often survived in America in comparatively recent cultures. Some early American periods have certain features in common with Eastern Hemisphere periods, but none of the Old World Paleolithic or Neolithic cultures are present in typical form in the New World, and there is no reason to suppose that America had a cultural sequence that corresponded precisely in either content or chronology to that of the Old World.

That human remains are associated with extinct fauna and flora is not per se evidence that they had great antiquity, for the extinct species may have survived locally until quite recently. Such associations have greater significance when the extinct species is evidence of important climatological change.

Attempts to place human remains in major geological periods have yielded no generally accepted results because, first, the time calibrations are too gross to be of value in cultural sequences, and second, the presence of human remains in older geological strata often has been found to be a later, secondary intrusion. Satisfactory field techniques have not always been utilized to demonstrate the contemporaneity of cultural and geological remains. The correlations of human remains with glacial periods, however, is susceptible to finer calibration, and certain correlations of cultural materials with periods of great climatological and physiographic changes in North America are now generally accepted. Though opinion concerning the absolute dates of these changes is not yet unanimous, the margin of disagreement is being steadily narrowed.

To judge by the correlations of human remains with glacial and postglacial phenomena in North America, man unquestionably was present in the New World at the close of or during the last phases of the final glacial period, which was certainly 15,000 and possibly 35,000 years ago. The Folsom bison hunters, represented by a lithic industry with some Upper Paleolithic features, are definitely known to have lived in the western United States during the final phase of the Wisconsin glaciation (Roberts, 1945). The oldest remains in Sandia Cave, New Mexico (Hibben, 1941) are probably earlier than Folsom. It is presumed that man reached America from Asia via the land bridge which linked Siberia and Alaska during the glacial period. (See also Sauer, 1944.) Ocean navigation was certainly not developed at this time; the Polynesian migrations in the Pacific occurred mainly during the Christian Era, especially the last millenium.

No remains of Central or South America have yet been shown to have antiquity comparable to those of North America. It should be remembered, however, that there has been comparatively little search for ancient man in South America and that, before the Folsom remains were found 20 years ago, orthodox opinion assigned the Indian a maximum antiquity in North America of only 5,000 to 8,000 years.

Central and South America, however, have remains of pre-agricultural periods. The human footprints found in the volcanic mud in Nicaragua almost certainly antedate the earliest *Mayan* civilizations. The oldest remains of southern Patagonia and at Magellan Strait may plausibly be assigned an antiquity of 5,000 years—2,000 is the minimum—and correlations of these with glacial periods may require that their age be extended (Handbook, 1: 21–22). Human remains have been found associated with extinct fauna at various sites, but the fauna is rarely dated with any certainty. The Lagoa Santa or Confins man, however, seems to have been relatively primitive (Handbook, 1: 399), and the associated human and extinct sloth remains in Tierra del Fuego (Handbook, 1: 22) may have fairly great age.

None of these primitive South American remains resembles the oceanic cultures, but they are generally similar to preagricultural materials in North America. As there were no serious obstacles to man's gradual migration southward from North America, it is far simpler to derive the Indian of South America from this source than to postulate that he came by trans-Pacific migrations.

## EARLY AMERICAN CULTURES

The data of both archeology and ethnology now leave no doubt that man first entered America from northeastern Asia, long before agriculture was known anywhere in the world, and that he possessed a Stone Age culture. He spread slowly throughout the hemisphere, from Alaska to Tierra del Fuego, adapting his mode of life to local environments with the aid of a simple technology and a limited number of material aids. Subsequent to the original migrations from Siberia and prior to the voyage of Columbus, Old World influence on the New World was very limited. Asiatic influence is evident on the northwest coast of British Columbia and Alaska; some elements have a circumpolar distribution around the subarctic, and a few traits, such as the bow, spread very rapidly and widely in America. Within the last two or three thousand years, other traits (p. 744) may have spread directly across the Pacific to the western shores of America.

Certainly no less than 3,000 years ago, and probably much more, the Indian began to bring native American plants under domestication. The cultivation of these plants spread widely, but did not reach the tribes in the northern and western parts of North America and in the southern and some of the eastern parts of South America. The peoples beyond the limits of agriculture remained Marginal, and they retained fairly primitive cultures, which, though in no case precisely like that of the first immigrants to America, were comparable to it in general simplicity. A comparison of these cultures together with the archeological evidences of early man gives a general picture of what once was probably pan-American in distribution. But it is impossible to reconstruct the original sociopolitical patterns, except in terms of absences, such as social classes. The early culture must be reconstructed largely in terms of isolated elements, and many of these, though very old, may date from anywhere in the thousands of years of prehorticultural times for which there is scarcely any archeological record.

**Technology and material culture.**—To judge by the Period I remains of the middens of Tierra del Fuego (Handbook, 1:17 ff.) and by the Folsom finds, the earliest Indians knew the use of fire, pressure flaking of stone, and the process of cutting and grinding bone. They used some kind of projectiles—possibly but not certainly spears—which were tipped with stemless, chipped-stone points, and they worked skins with stone scrapers and bone awls.

On the other hand, the very considerable list of traits found among the Tropical Forest, Circum-Caribbean, and Andean tribes but not among the Marginal peoples, were almost certainly absent from the early American cultures. These include: domesticated crops; traits of food preparation, such as use of salt, babracots, metates, and mortars; technologies, such as ceramics, loom weaving, basketry, true tanning of skins, and metallurgy; and esthetic and recreational traits, such as musical instruments, chicha, tobacco, and other narcotics and stimulants; many elements of warfare, including cannibalism and human trophies; and temples, priests, idols, human sacrifice, and a ritual cycle.

**Sociopolitical and religious patterns.**—No special sociopolitical patterns can be shown to have characterized the early American cultures. We have seen that at the Conquest the Marginal tribes had a wide variety of patterns which reflected their ecological adaptations no less than their cultural heritage from the past. An effort to reconstruct the early patterns on a split-distribution basis by drawing parallels between the Marginal peoples of North and South America would be very misleading, for the similarities are quite superficial in most cases.

Among the *Shoshonean* tribes of the Great Basin of western North America and among the *Nambicuara*, society was based on the individual family, but the socioeconomic activities of the two areas were very different and so were the larger, looser, multifamily aggregates that occasionally assembled. The patrilineal bands of the *Ona* (60 to 100 persons), each with a hunting territory for big game, were only superficially similar to the conjugal family groups of the *Algonquians* of Canada, each of which owned a territory for trapping fur-bearing animals. The large, caribou-hunting *Athabaskan* bands (200 to 250) of Canada had no parallel in South America, and the matrilineal villages of the Chaco have no precise North American counterpart. The main similarities between North and South American Marginal tribes, in fact, occur where the ecological adaptations were similar. For example, patrilineal bands were found in southern California and in Tierra del Fuego—both hunting areas but without large, migratory game herds. Mixed bands, i. e., multilineage or multifamily bands, of some size were found in the Great Plains of North America and Patagonia, and in both areas they were post-Columbian and were based on use of the horse for hunting and traveling.

The most that can be claimed for the earliest American tribes is that the people lived in small, generally somewhat migratory, groups which probably consisted of kin, that they lacked developed chieftainship and social classes, and that they were structured on the basis of sex, age, and socioeconomic activities.

There are, however, a number of socioreligious features which are virtually universal among primitive peoples and may be accredited with great antiquity: fasting by the mother of a newborn child; the isolation and fasting of a pubescent girl; earth burial; belief in a soul and a life after death; belief in supernatural beings; belief in witchcraft and omens; shamanism (but see p. 588); and shamanistic curing by massage, blowing, and sucking.

**Some individual culture elements.**—A considerable number of culture elements which were frequently found among the Marginal peoples of North and South America but less often among the farming tribes have been interpreted as possible ingredients of an early, preagricultural period. (See Nordenskiöld (1931), Krickeberg (1934), Ploetz and Métraux (1930), references cited by Cooper (1942), and Handbook, 2: 213–214.)

This application of the split-distribution method can be accepted only with certain qualifications. First, as Cooper (1942) points out, some of these elements may well have been invented independently in North and South America in response to environmental needs, so that their distribution is no evidence of their antiquity. Second, some elements may have developed as part of the agricultural complex and spread beyond its limits, later being superseded among many farming tribes. Such, for example, appears to have been the case with coiled basketry; and netting, though older than loom weaving, is not necessarily prefarming. Third, terms such as "archaic," "preagricultural," and "early" are altogether too general. Presumably, the preagricultural period in America lasted some 10,000 to 15,000 years, during which culture became considerably specialized in the different areas. Finally, few of the traits accredited with great antiquity in America occurred among all Marginal peoples. Rather, they seemed to cluster in certain tribes and groups of tribes, and it would be wholly unwarranted to assume that they were once pan-American in distribution and have since inexplicably disappeared among many Marginal tribes. Certain games, for example, link the Gran Chaco and North America, but they are wholly absent in the Chilean Archipelago.

The most fruitful working hypothesis is that American culture history was very complex. To understand this history we need evidence of period and regional differences derived from detailed archeological sequences and ethnographic comparisons. A certain clustering of these early traits, for example, suggests that there were at least two streams of influence in South America, one carrying certain complexes down the Andes and the other entering the eastern part of the continent. Where archeological sequences are known, the culture appears to have arrived in a succession of waves. The following list shows the clustering of some of the elements that occurred also among North American Marginal tribes:

*Araucanians.*—Shaman as transvestite (also *Puelche*); use of tamborine; and pubescent girls race at dawn and carry fire wood (also West coast of North America).

*Paraná River.*—Finger mutilation as evidence of mourning; placing skewers through the skin; and fasting for a guardian spirit (all *Charrua* and especially Plains in North America).

*Chaco.*—Such myth motifs as the trickster, the vagina dentata, and the theft of fire, the last also Montaña, eastern Brazil (Métraux, 1939; see also Handbook, 1: 369); such games as ring-and-pin (also Montaña), dice (also Andean), "snow-snake" (*Abipón*, *Mocoví*, also eastern Brazil), gambling (also Andean), the musical bow (*Mataco*, *Toba*, *Lengua*, *Guaná*), and scalping (also Guianas).

*Elements of a spotty distribution.*—Some elements were fairly widespread among North and South American Marginal tribes, though not common to all of them: harpoons, spear throwers, nets, traps, fishhooks, body painting, depilation, some kind of secret society, usually for men (*Ona*, *Chamacoco*, eastern Bolivian and Juruá-Purus *Arawak*, Northwest Amazon, *Bororo*), and the belief that disease was caused by the intrusion of a foreign object into the body.

Features of more limited distribution include such elements as the ritual drinking tube (*Yahgan*), head-scratcher (*Yahgan*, *Tucanoans*, *Choco*, *Apinayé*, *Canella* and other *Ge*), steam bath (*Purí-Coroado*, *Botocudo*, *Araucanians*), fasting for a guardian spirit (*Charrua*), arrow swallowing (*Tehuelche*, *Tereno*), certain musical styles (*Yahgan*), deer-hoof rattles (Chaco, eastern Brazil), the soul-loss theory of disease (Andes, Chaco, eastern Brazil), the bull-roarer (*Sherente*, *Apinayé*, and *Mataco* as a toy; *Choco*, *Aymara*, *Bororo*, *Mashacalí*, Bolivia, Antilles, *Araucanians*, Central America, Guianas, *Apinayé*), hoop-and-pole game (*Sherente* and some Guiana, Amazon, Chaco, and Fuegian tribes), hockey (Chaco, *Tehuelche*, *Araucanians*, *Northern*

*Cayapó*), snow-snake (Chaco, eastern Brazil),[5] boiling water with hot stones (*Aweicoma*, *Chono*, *Caingang*, *Shokleng*, *Botocudo*, *Purí*), heating water with hot stones (*Yahgan*, *Ona*); earth oven ("*Tapuya*," *Purí-Coroado*, *Caingang*, *Shokleng*, *Aweicoma*, Chaco, Argentina, *Northwestern Ge*, *Southern Cayapó*), and strike-a-light (Archipelago).

## THE CULTURES BASED ON AGRICULTURE

### ANDEAN CULTURE DEVELOPMENT[6]

On the basis of present evidence, American plant domestication appears to have been undertaken independently in many places and at different periods. Some species, such as maize, beans, and squash, attained wide pan-American distribution, but on the whole, each geographical area had, in addition to these plants, its characteristic complex of staple crops: the intermediate and low Andes, maize and other cereals; the high Andes, potatoes and quinoa; the Tropical Forests, root crops; and the Northern Andes, many fruits. The oldest evidence of agriculture is in the Central Andes, where it is conservatively assigned an antiquity of about 500 A. D. (Handbook, 2: 80). Some authorities believe that it should be dated 1,000 years or more earlier; in México the first evidence of farming is probably much later. Thirty-one domesticated plant species are known from the Early Periods of Perú, and probably most of them were cultivated during the preceding Chavín Periods. Several of these plants, such as lima beans, had already reached the limits of their genetic variability in the Early Periods, implying a long antecedent period of crop breeding. The domesticated llama and alpaca were also present in the Early Periods.

Botanical data suggest that some area to the east of the Andes may have been the locale of the first cultivation of the principal Andean crops, especially maize. Eastern Bolivia, with its milder and more varied climatic zones, is a likely place, and its archeology has rich remains that may include those of very early agricultural peoples. The archeology of eastern Bolivia, however, is scarcely known, and early sequences have not yet been established. It is necessary, therefore, to look to Perú with its long chronology, for a picture of the earliest cultures based on farming. The oldest Peruvian culture yet identified is that of the Chavín Periods, which may have covered a considerable time span. The remains of the Early Periods, which followed the Chavín, give a more complete picture of life at that time.

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[5] For games and gambling, see Cooper, this volume, p. 503.

[6] For the sequence of Andean Periods, see Handbook, vol. 2, p. 80. Research since 1945, especially the Virú Valley Project in Perú, has extended cultural sequences back to a preceramic, agricultural period, corrected the order of the periods as given in the Handbook, and thrown new light on the development of social, religious, and military patterns. (See Steward, 1947, 1948; Strong, 1947; Willey, MS.)

In the Early Periods, agriculture was already well established in Andean patterns, even extensive irrigation works being used. Farm productivity is evidenced not only by the fairly dense population but by the development of manufactures, the building arts, and religion and warfare, which took many persons from subsistence activities. Transportation was no less efficient than in later periods, for huge balsas were used for coastal travel and llamas packed goods over roads on the land. The precise settlement pattern has yet to be ascertained, but communities appear to have been small and dispersed, though closely spaced, and if they were nucleated at all, it was around religious centers, such as the classical Highland site, Chavín de Huántar. There was certainly no urban planning, as at later sites like Chanchan. Habitations of the Early Periods occur either as isolated dwellings or as loose clusters of dwellings forming small villages; any planning was of religious rather than civil centers.

Evidence of a stratified society, developed warfare, and a priest-temple cult is unmistakable in the ceramic decorations and representations (Handbook, 2:149–182), especially of the Mochica Period. These patterns must have resembled those of the later Andean peoples, and they appear to have been even more elaborate than those of the Sub-Andean and Circum-Caribbean areas.

Pottery designs show chiefs or nobles with characteristic evidences of rank: wearing special dress and insignia, sitting on thrones, being carried in litters, receiving obeisance from kneeling or bowing subordinates, being served by retainers, and meting out punishment. Considerable governmental control is implied by the construction of great mounds, buildings, irrigation systems, roads, and other public works, by the use of runners or messengers for communication, and by the public imposition of punishment.

Warfare was strongly developed. Armies wearing special dress and using all the principal weapons of later periods fought under powerful war chiefs. Captives were sacrificed, probably in religious rites, by being thrown from mountain peaks, or they were made into human trophies, especially head trophies. Cannibalism is not shown, but the quartering of prisoners is suggestive of the *Tupian* cannibalistic festivals.

The three-story stone edifice at Chavín de Huántar and the temple mounds of the Early Periods were almost certainly religious centers. The feline, serpent, and condor deities which are represented in so much of Peruvian art were undoubtedly among the principal tribal gods. Various other nature gods are also portrayed. An important class of priests officiated over public worship, but it is not known whether they were also shamans and whether they had civil power. There was also ancestor worship, or a cult of the dead, as evidenced by the elaborate mummy burials. Shamanism was probably present with its familiar patterns, for shamans (possibly priests) are shown shaking rattles and, less often, massaging and sucking their patients.

On the technological and material side, the essential processes and complexes were thoroughly established by the Early Periods, and craft production seems to have been specialized. Painted, plastic, and modeled ceramics equalled those of later periods. All weaving techniques were known, and both cotton and wool were used. Basketry was made, evidently at first twined and twilled (Early Ancón and Supe), and later coiled; if correct, this sequence reverses the usual one elsewhere in America. The weapons used in Perú at the Spanish Conquest were already present: darts, spear throwers, clubs, and slings. The Mochica also had the blowgun and dart. The only industries to show technological advancement subsequent to the Early Periods are masonry and adobe construction and metallurgy. Chavín used only gold; Mochica added silver, platinum, and copper; only the Middle or Late Periods achieved bronze.

The Chavín culture, though the earliest known in Perú, is far from primitive or even formative, and it probably had the basic features of the succeeding Early Periods. Its subsistence was adequate, its technological and material culture contained virtually all essential elements and complexes of later periods of the Andes, its sociopolitical and religious patterns were clearly developed far beyond those of the Marginal or Tropical Forest peoples, and its esthetic attainments show considerable sophistication. Although its ultimate origins are still obscure, it is difficult to imagine that it was suddenly introduced full-blown from across the Pacific. Instead, it must have developed along with the indigenous American crops, on the cultivation of which it was based.

Cultures of the Chavín and Early Periods would seem to have contained the generalized patterns that were later to take more definite form. Undoubtedly there was some local variation, but the main features were more or less pan-Andean. If San Agustín has antiquity comparable to that of Chavín, a similar pattern probably existed in Colombia. In fact, it probably extended northward to México, and the basic *Mayan* pattern of a population loosely aggregated around great mound and temple sites seems to represent a special emphasis on the socioreligious components of this culture.

Subsequent Andean trends bring out the potentialities implicit in the early patterns. Population evidently increased considerably, for in the Middle Periods hillsides were terraced for farming purposes. After the Early Periods, civil and military affairs were developed on a larger scale, a development no doubt partly explainable by the pressure of the growing population. An increasing proportion of construction was devoted to building forts, and, to judge by the pre-*Inca* or Late Periods, each of the kingdoms and many smaller states was constantly at war with its neighbors. Civil developments are evidenced by the construction of planned cities, especially on the North Coast of Perú, where large urban centers were laid out with protective walls, gardens, reservoirs, ceremonial mounds, cemetaries, streets, and blocks of houses.

Attainments in political organization and conquest, however, were probably not the same throughout the Central Andes. The Tiahuanaco culture, which widely affected local areas throughout Perú, may have represented a military conquest comparable to that of the *Inca*, which had the same cultural effect. Even the classical site of Tiahuanaco, however, seems to have been a predominantly religious center, and the Tiahuanaco influence may have been more religious than military. Subsequent to the Middle Periods, a considerable local autonomy seems to have returned. In the Highlands, the population remained dispersed, being only loosely nucleated around religious and administrative centers, and political control did not extend beyond the ayllu or group of ayllus which formed the independent state. Each Coastal valley, too, probably retained considerable independence. The North Coast, however, had a long tradition of centralized planning. This planning may have been only within the framework of independent city states, which began at sites like Chanchan, in the Middle Periods, but large irrigation systems evidence the extension of centralized control over considerable areas. By and large, it was in advance of the Highlands. The *Inca*, relative newcomers to empire building, were the first people who are known to have incorporated all of the Central Andes in a single state. The *Inca* (p. 734 ff.) developed government at the expense of other features of the earlier patterns. A somewhat fluid class structure, in which status could be attained by the capture of slaves and concubines, was replaced by a hereditary caste system, which was based on wealth-producing commoners and in which the slave class became unimportant. Even the priests came to form a stratified, hereditary class, and so did the very gods. All religious, economic, social, and military activities of state concern were fitted into a system of governmental control, though otherwise the folk culture was left intact (p. 737).

## SPREAD OF THE ANDEAN PATTERNS

Outside the Central Andes, South American archeology has not yet disclosed with certainty the cultures that were contemporary with the Chavín and Early Periods of Perú. Ethnographic data and fragmentary archeological evidence, however, show that most of the basic technologies, many items of material culture, and even the sociopolitical patterns of the Central Andes attained a wide distribution.

**The Marginal areas.**—Eastern Brazil, the Pampas, Patagonia, and the Chilean Archipelago felt little influence from the Andes. None of these areas contains archeological evidence of anything more advanced than the Marginal tribes which occupied them at the Conquest, except those portions of eastern Brazil where a Tropical Forest type of culture attained limited distribution.

**The Southern Andes.**—The Southern Andes, to judge by the archeological sequences on the coast of North Chile, had a Marginal type of technology prior to the introduction of agriculture. The Early Period traits include: spear throwers, bolas, harpoons, fishhooks, fire drills, and earth burial. With the introduction of agriculture came pottery, especially painted wares, coiled basketry, slings, wool and cotton weaving, sandals, dogs, and balsas (Handbook, 2: fig. 49). The southward diffusion from the Central Andes was intensified toward the end of pre-Conquest times by the development of overland trade, which was carried on by means of pack llamas traveling on roads. Under the *Inca* Empire, the Southern Andes received metallurgy, Central Andean type garments, and other traits, many of which reached the *Araucanians.*

The *Atamameño* and *Diaguita* had a rich Andean-type material culture, some of it probably acquired in Tiahuanaco times, but they retained a primitive sociopolitical pattern, because the forbidding deserts, even though exploited by Central Andean techniques, could not support sufficient populations to maintain a class system. The communities remained comparatively small and seem to have consisted mainly of lineages or kin groups. The *Araucanians* occupied a much more fertile area and had a denser population, but it was divided into a greater number of units rather than into larger, more close-knit ones. These units were of the Tropical Forest type, based on the lineage or kin; social classes had scarcely emerged and intervillage federation hardly begun.

The *Araucanian* culture has resemblances to areas other than the Andes. Frame, thatched houses, palisades, dugout canoes, urn burial, and cannibalism link it with the Tropical Forests. The association of transvestitism and the tamborine with shamanism are characteristic of Siberia and the northwest coast of America. The distribution of this peculiar shamanistic complex is difficult to explain; possibly transvestitism in Colombia, which had some ritual significance, is another survival of an early widespread complex.

**The Northern Andes and Circum-Caribbean area.**—At the Conquest, Ecuador, Colombia, and the area around the Caribbean Sea had a pattern which contained all the essential features of the Chavín and Early Periods of the Central Andes, though these features were developed in differing degrees. An ample subsistence complex supported a very dense population, though crops adapted to the rain forests took the place of certain Andean species, and, along the coast, sea resources were added to farming. Society was stratified into chiefs or nobles, commoners, and slaves or war captives. There was a temple cult dedicated to tribal gods and served by priests or by shaman-priests. Warfare was strongly developed, and it afforded individuals a means of attaining rank. Technological processes included ceramics, woven basketry, and metallurgy in gold and tumbaga. In the Central Andes, metallurgy was the only technology to advance radically after the Early Periods; processes of the latter periods, such as copper smelting and bronze making, are not found among the Circum-Caribbean peoples.

The similarity in general patterns as well as in specific elements of the Andean Early Periods and the Circum-Caribbean culture of the Conquest indicates some connection between the two. This is not to say that the latter was derived entirely from the former. In a comparative analysis of the Circum-Caribbean culture in volume 4 (pp. 6–11), it was shown that the general patterns and traits of this culture extended from the Andes to México and Yucatán. It was postulated that an early, inter-American Formative Period culture underlay the more special later developments of all these areas and that this culture had the following features: Subsistence based on fairly intensive farming, especially of maize; dispersed settlements that tended to nucleate around religious centers; political units limited to the village or small state; a class tendency, status being accorded warriors and religious leaders, who probably exercised considerable civil power but whose rank was achieved rather than inherited; religious mounds, altars, idols, offeratories, and shrines; priests, probably becoming distinct from shamans; considerable warfare; captives taken as slaves and as sacrificial victims; children of slaves, however, probably free; human sacrifice; cannibalism, probably ritual; human trophies, especially skulls and flayed skins; ritual blood letting; celestial and animal deities, and incipient agricultural ritual; construction of causeways, aqueducts, canals, defensive works, and stone buildings; bark cloth; loom weaving of domesticated cotton and use of batik and tie-dyeing; painting, negative painting, incised, and plastic treatment of pottery; featherwork and feather mosaics; metates; armor; coiled and woven (?) baskets; cloth garments; sandals; and many other culture elements of a very wide inter-American distribution. This

Formative Period culture contained the essential features of the Circum-Caribbean culture.[6a]

In many respects, however, the Circum-Caribbean culture is more closely linked with the Andes than with México or Yucatán. Central America and the Andes share such archeological traits as stone-cist and deep-shaft graves, stone stools, jaguar-form stools, Manabí-type stone slabs, and mace-head clubs, and such ethnographic features as the platform bed, burial of subjects with a chief, mummification, and tumbaga (the last north to Panamá). Colombia was even more closely linked with the Central Andes (p. 731) though it also shared very fundamental features with Central America. Thus, the *Chibchan* language extended northward to the *Ulua-Sumo-Mosquito* in Nicaragua, and both Colombia and Central America seem to have had a basically matrilineal society, in contrast to both México and the Central Andes.

There is also a number of traits which link Central America and the Tropical Forest tribes: manioc, Muscovy duck, babracot, pole-and-thatch house, palisaded villages, communal house, hammock, blowgun, and other elements especially adapted to tropical rain forests (p. 698).

A significant number of these Andean and Tropical Forest traits also reached the Antilles.[7]

Mexican influence is not wanting in Central America, but it appears to be relatively late, it is definitely concentrated among the Meso-American tribes who were scattered along the Pacific Coast, and it did not reach the Antilles (Handbook, 4: 199).

In the northern Andes and in Central America, it seems certain that a Formative Period culture preceded the Circum-Caribbean culture. The areal differentiation and interareal linkage of this postulated early culture are still to be determined. Possibly all of it came from South America; present data, however, cannot support such a contention. The data of both archeology and ethnology, on the other hand, show that apart from the general inter-American or Formative Period features, Central America is related to South America rather than to México or Yucatán; i. e., the flow of more specific features has been predominantly northward for a long time. For precisely how long this has been so remains to be determined. It is suggestive that litters were known in the Andean Early Periods and that deep-shaft graves in Colombia may have comparable antiquity.

There is reason to suspect that at some early period or periods, Andean culture may have spread with considerable vigor into tropical rain forest areas, where it subsequently diminished or disappeared.

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[6a] For modification of the following analysis, see Steward, 1947, 1949.

[7] Some interesting features of the Circum-Caribbean culture were found among certain North American tribes, especially the *Natchez,* bordering the Gulf States. No historical connection of these cultures is postulated, but a comparison of them would be interesting.

This expansion was, perhaps, comparable to that of the Pueblo II Period in the Southwestern United States. A similar, though more restricted expansion, occurred during the Tiahuanaco and *Inca* Periods. Evidence of this early spread consists of such archeological remains as stone construction, irrigation works, terraces, roads and causeways, which are found in various places in eastern Bolivia, in the llanos of eastern Colombia, in the Venezuelan Andes, and in the Highlands and North Coast of Colombia. Though some of these remains may eventually be identified with the historic tribes, many of them seem to have fallen into disuse long before the Spanish Conquest. Central America, too, may well be found to have archeological remains evidencing a more complex culture than that found at the Conquest.

A highly speculative explanation of these remains is that an Andean-type culture expanded at an early period into sparsely populated areas well beyond the Andes. These far-flung remains, however, do not have a uniform style, comparable to that of the Pueblo II, Tiahuanaco, or *Inca* cultures, and the expansion must have been gradual. In the course of time, population pressure and warfare perhaps led to the development of tightly nucleated, palisaded villages in place of dispersed settlements, and to the abandonment of hilltop forts, roadways, stone construction, and the building of mounds, except for burial purposes. At the Conquest, the only great civilization outside Highland areas were those of the *Maya*, and these were in the dispersed settlement pattern. This unique *Maya* adaptation and survival presents an interesting problem.

**The Tropical Forests.**—A class-structured society was not characteristic of the Tropical Forest tribes, and, though the large villages found in many regions of exceptionally dense population would seem to have afforded a basis for it, social cleavage was predominantly in kinship groups. In many tribes, however, rank was accorded to warriors, who formed something of a class, and captives were kept as slaves. Among some tribes which acquired the horse after the Conquest, classes definitely emerged to form a pattern like that of the Sub-Andean tribes.

It is difficult to know whether the status accorded warriors was the result of purely local development or of diffusion, because stimulus-diffusion from the Andean and Sub-Andean cultures may have been far-reaching. An opportunity for such diffusion was provided by the proximity of some of the class-structured tribes to the Andes. The definite class-tendency of the *Atacameño*, *Diaguita*, and *Araucanians* can certainly be traced to the Andes. Even the *Comechingón* and *Huarpe* of the neighboring Pampas, despite their Marginal ecology, showed slight influence of this tendency. The *Abipón*, *Mocoví*, *Paya-*

*guá*, and *Mbayá* of the eastern Chaco, though definitely Tropical Forest in their technologies and material culture and separated from the Andes by the Marginal peoples of the western Chaco, may have been affected by the Andes at some time in the past. It is interesting that the *Mbayá* were one of the few non-Andean tribes to carry on wars of conquest. The *Tupí* and *Carib*, though extraordinarily warlike, were geographically remote from the Andes and the Caribbean area. They lacked true warrior classes, and captives were bracketed into kin groups rather than into a slave class. The *Arawak*, especially of the Guianas, possessed incipient social strata in that sons-in-law became a patriarch's retainers, though here, too, society was still on a kinship basis. It may be significant that some Guiana tribes, especially the *Arawak*, were matrilineal, like the Circum-Caribbean peoples, whereas most Tropical Forest tribes were strongly patrilineal.

The Tropical Forest tribes lacked a temple-idol cult. A few of them had public harvest ceremonies, and among many, the shaman performed oracular functions in the men's club. As a rule, however, the shaman apparently conferred with his own spirit-helper rather than with a tribal god. The gods, especially celestial ones, which became objects of tribal worship among the Circum-Caribbean and Andean peoples, were usually little more than mythological characters in the Tropical Forests. If there is a connection between Tropical Forest and Circum-Caribbean religion, it is probable that the latter, under Andean influence, built on a Tropical Forest pattern, assigning the shaman priestly functions, especially as an oracle for the tribal gods, which were represented by idols and kept in a special temple. The Tropical Forest men's house was the functional equivalent of the temple in being the scene of various rites, but it also had purely social purposes.

In technological and material culture, the Tropical Forest tribes had all Circum-Caribbean features except metallurgy; they used loom weaving, domesticated cotton, ceramics, and woven basketry. The resemblance of these material traits to those of the Circum-Caribbean area, however, is greatest in the Guianas and Amazon. In eastern Brazil and around the periphery of the Amazon, many of them disappear.

In addition to the technologies, which were perhaps ultimately Andean-derived, the Tropical Forests had many traits which they shared with the Circum-Caribbean peoples but hardly at all with the Andes. Many, but not all, of these are adapted to tropical rain forests: the tropical root crops; thatched, frame houses; scant garments; hammocks; dugout canoes; bark cloth; blowguns; arrow poisons; fish poisons; rubber-ball games; hollow-log drums; and use of tobacco.

The present thesis postulates that the Tropical Forest culture derived its essential technology from the Circum-Caribbean culture and that it also acquired certain rain forest traits, but it failed to borrow the Circum-Caribbean sociopolitical and religious patterns. In becoming adapted to fluvial, littoral, and rain forest areas, the technological complex spread via the main waterways. Specifically, it seems to have spread from Venezuela down the Atlantic Coast and up the Amazon and its tributaries (perhaps secondarily it spread up the Orinoco and down the Rio Negro), suffering successive losses as it reached the headwaters, where many of the tribes remained Marginal or Semi-Marginal. It is clearly evident, however, in the Peruvian Montaña (Handbook, 3:535; 5:697), and it may have broken through the watershed of the Amazon in eastern Bolivia to reach the upper Paraguay River, while another stream flowed down the coast of Brazil to the Paraná Delta. It followed the rain forest and major waterways but scarcely penetrated the plains and savannas, where the tribes remained Marginal.

Certain major linguistic groups with a wide distribution must have played an important role in the diffusion of the Tropical Forest culture. In the north, the *Arawak*, some of them with a Circum-Caribbean culture, and the *Carib* are outstanding. South of the Amazon, the *Tupí* were among the major culture carriers. On the other hand, the many small, linguistically isolated Marginal and Semi-Marginal groups clustered around the periphery of the Amazon Basin (map 18) are probably to be regarded as predecessors of the far-flung language groups. Pushed to the back country, they have long remained in isolation.

Some authors have ascribed to the *Arawak* the most important role in developing and spreading South American cultures. To these people has been attributed the diffusion of vertical looms, the cult complex with secret trumpets, elaborate ceramics, and other traits throughout the Tropical Forests. They have been accredited with the spread of Circum-Caribbean traits to the Antilles and to Central America and even the introduction of the early Chavín, Tiahuanaco, and other cultures to the Andes. In view of the very great differences in the cultures of local *Arawakan* tribes—for example, the Circum-Caribbean Island *Arawak* of the Antilles, the Sub-Andean *Arawak* of eastern Bolivia, the Semi-Marginal *Campa*, *Piro*, and others of eastern Peru, and the Tropical Forest *Arawakans* of the Guianas—it is necessary first to establish that there was such a thing as an *Arawakan* culture. In terms of their sociopolitical patterns, it is obvious that these tribes would have to be classed with their neighbors on a culture-area basis rather than with one another on a linguistic basis. The more important traits and technologies, such as ceramics, loom weaving, and basketry, occurred among the *Quechua* and *Aymara* of the Andes, the *Chibcha*, *Carib*, and other tribes of the Circum-Caribbean area, and the *Carib*, *Panoans*, and dozens of smaller linguistic groups in the Tropical Forests; they were by no means peculiar to the *Arawakans*. The *Arawakans* certainly played an important role in diffusing these features in parts of the Tropical Forest areas, but even here their role has yet to be clarified. One has the impression that the importance attached to *Arawakan* migrations resulted in part, at least, from a certain methodological approach to the problem of culture classification: when cultures are described by linguistic groups rather than by areas, there is a concomitant tendency to assume a culture type for each language and then to reconstruct the history in terms of the migrations of language groups.

## POST-COLUMBIAN CULTURE HISTORY

Comparatively little attention has been accorded the acculturation and assimilation of the Indian to European culture since the Spanish Conquest. The literature is probably adequate to sketch the broad outlines, but it has been utilized mainly to reconstruct aboriginal cultures and the data of the 400-year post-Contact Period have usually been compressed into a two-dimensional picture without historical perspective. What are virtually pioneering essays in identifying and describing some of the post-Columbian acculturational periods are, however, included in several Handbook articles. (See especially Kubler's on the Andes (2:331), Murra's on Ecuador (2:785), Steward's on the Montaña (3: 507), and Tschopik's on the *Aymara* (2:501).)

The Europeans brought to South America a comparatively homogeneous culture. Though their initial penetration was variously made by the conquistador, missionary, or colonist, the prevailing purpose was to exploit the native peoples through a system of tribute, which soon amounted to mass labor. The success of this system and its effect on the Indian depended upon various local factors: the native population density; the incidence of disease on the natives; the accessibility of the area and its suitability for Iberian types of land use; and the predominating facet of European culture, such as proselytization, mining, or conquest.

**The Marginal and Tropical Forest areas.**—Along the coast and navigable interior waterways, the Indian was, as we have seen (p. 664 f.), quickly exterminated or absorbed. In the less accessible areas, he survived and retained a native culture, but he was strongly affected by the Whites even before direct contact with them. Throughout the Tropical Forest and Marginal areas, the course of pre- and post-Contact acculturation was similar in certain general respects.

Prior to the arrival of the Europeans in these areas, the Marginal and Tropical Forest Indians received certain vital trade goods which brought a temporary efflorescence of and even deep changes in their culture. New crops, domesticated animals, and steel tools, and, later, firearms and other items so improved exploitative activities and transportational facilities that villages of unprecedented size developed, tribal contacts were increased, and even aboriginal culture elements, such as the blowgun and bow, were diffused to many tribes which had previously lacked them. Communities became larger, requiring new political controls and involving new kinds of interpersonal contacts, and warfare was intensified by the pressures of dislocated tribes.

These changes were within the frame of the preexisting, native culture, but certain striking new sociopolitical patterns emerged from the new ecological patterns. In the case of the Pampean and Patagonian tribes, the effect was very similar to that among the Plains Indians of North America. The former were hunters of guanacos and rheas in grass and brush country; the latter, of bison on the prairies. In pre-horse times, both had lived in small bands. The Patagonian bands were probably patrilineal, like those of the *Ona;* some of the Plains tribes, however, had been farmers. In both areas, the horse and a limited amount of gear were introduced by the Spaniards, even before there was close contact between Indian and White. In both, the advantage of the horse as an adjunct of hunting and as a pack animal permitted the small aboriginal groups to amalgamate into bands, which, though unstable, were far larger than anything possible among foot Indians. Some of the North American farming tribes of the Plains gave up their fields to become horse nomads. The territory claimed by each of these bands became larger, though less well defined than previously, and the chief gained in power and prestige. The tribes bordering these areas were dislocated, causing intertribal strife and intensifying warfare. Cultural features less closely connected with the ecology were different in the Plains and the Pampas; for example, dress, house type, and ritual elements, but even some secondary traits, curiously, appeared in both. For example, people artificially lengthened their tresses with horse hair. (Regarding the influence of the horse on the Chaco, see volume 1 of the Handbook, pp. 202–203, 265–267, 304–308. For the *Goajiro*, see Volume 4, pp. 369–383.)

In some areas, the Indians were first contacted by missionaries. Though the orders adopted different policies, all of them settled the Indians in large villages and encouraged farming and various new crafts. This served to introduce considerable European culture, including Christianity, but disease rapidly reduced the populations in the mission villages. In many cases, the natives rebelled and returned to aboriginal modes of life. Those who remained continuously in the missions have become very nearly extinct.

Where the European colonists established settlements, the Indians became attached, voluntarily or through enslavement, to them. Consumption of European food and goods, use of European dress, and completely new economic and social habits quickly eradicated native culture. The Indians who survived the frightful toll of epidemic diseases were gradually absorbed into the White and Negro populations.

Along the coasts in the tropical areas and in the Antilles, the population was comparatively great, and it might be thought that it could have served the Spaniards for mass labor, as in the Andes. Instead the Indians disappeared amazingly soon and their place was taken by Negro slaves. One factor in this decline was the devastating epidemics of European diseases, especially in the large settlements established by the Spaniards. Another was probably the violence of the European Contact on peoples far less prepared for virtual servitude than the Central Andean tribes who had been under the *Inca* Empire.

Each year, the surviving Marginal and Tropical Forest peoples decline further in numbers and become more assimilated to national culture.

**The Sub-Andean and Circum-Caribbean tribes.**—These peoples experienced the same general post-Contact trends as those of the Tropical Forests, except for a difference brought about by the distinctive features of their aboriginal culture. All the Indians of the Antilles and most of those elsewhere on the coasts and lowlands became extinct or were absorbed. In a few inaccessible regions, especially in the mountains, Indian cultures still survive, but they have experienced a phase of deculturation since the Conquest.

The older chronicles describe the class system, temple-idol cult, organized warfare, and esthetic craft production of Circum-Caribbean types. Modern ethnographies disclose only an unstratified society, a shamanistic religion, little or no warfare, and crude crafts. (See, for example, the *Cuna*, vol. 4, p. 257.) This step down to a lower level, very similar to that of the Tropical Forest tribes (4: 2), was the direct result of the Conquest, which destroyed the higher levels of organization rather than the folk culture. The military basis for a class structure was removed when warfare, cannibalism, human sacrifice, trophy taking, and slavery were stopped, and the hereditary basis was lost when the chiefs and nobles were required to give over power to Europeans. In addition, the tribes were forced into submarginal lands which could not maintain the earlier sociopolitical patterns, and, during the Conquest, warfare and disease greatly reduced the population. Organized native cult religion yielded to the Catholic Church, and only the more informal and private shamanistic and magical practices and folk superstitions survived. Technology and material culture deteriorated, partly because their finest expressions had been dedicated to the nobility, which was now gone, and partly because the new economy sank to lower levels of efficiency.

Stripped of their Circum-Caribbean and Sub-Andean features, these tribes were degraded to a generalized Tropical Forest level, and their patterns came to resemble those of the Amazon considerably more than those of their own ancestors. This phase of deculturation has considerable theoretical interest for it suggests that the Circum-Caribbean cultures were in reality Tropical Forest type cultures with an Andean overlay. This thesis, however, is antithetical to that suggested previously: that the Circum-Caribbean cultures might have represented a somewhat deculturated form of an earlier, fairly widespread Andean or Formative Period culture, which, by successive losses of social, religious, and esthetic features during both prehistoric and historic periods gradually converged toward the Tropical Forest pattern.

These observations are made to point up a problem rather than to offer hypotheses. To ascertain the prehistoric levels as well as the directions of cultural flow, archeology is badly needed, especially in Colombia, Ecuador, and Central America. To ascertain the precise nature of the native cultures at the time of the Conquest, the early chroniclers must be exploited to the fullest, for the ethnographies of the few tribes surviving today give a very incorrect picture of aboriginal cultures.

**The Central Andes.**—The Central Andes have differed from the remainder of South America in surviving the shock of Conquest and the attrition of European Contact without serious loss of population or culture. Epidemic diseases were not so devastating during the Conquest and Colonial Periods, and, though in the beginning the population may have been halved, the Indians have always outnumbered the Whites. The sheer numbers not only served to retard assimilation; they invalidated many European policies used elsewhere in South America. The minority of Europeans found it easier to exploit the vast labor supply through adapting their methods to preexisting native sociopolitical patterns than to completely uproot, recast, and finally replace the people. In the *Inca* Empire, they found a pattern more or less adaptable to their ends. They blanketed the higher officials into their class system and required the already subservient and much-exploited masses to supply tribute, taxes, labor (mita), and servants (yanaconas).

The effect of the Conquest on the Central Andes as a whole was similar to that on the Circum-Caribbean area. The more organized and distinctive forms of the Central Andean pattern were replaced by European forms while the folk culture remained more intact. The *Inca* governmental system was replaced by the Spanish, with its fountainhead at first in Spain. The native social castes were leveled, except as the curacas found a place in the European scheme. The priest-temple-idol cult and the rites pertaining to it were formally replaced by Christianity, but shamanism, sorcery, and the more covert beliefs and practices organized around local shrines and deities, especially the mountain spirits, were able to survive. Craft production became more or less restricted to the plain, utility goods which had always been made for home consumption. The nobility and the *Inca* church, which had received most of the art products, were now gone. The Spaniards were more interested in tribute, and they mined their own gold, which they converted into money rather than into ornaments. Many European elements were adopted, for example, wheat, barley, cattle, horses, mechanical looms, methods of house construction, and types of dress, but these merely augmented an already rich native material culture. At first, the new produce enabled the Indian to pay his tribute but was not adopted into his culture.

There have been two main acculturational trends: (1) individuals and classes of individuals have been detached from the context of native life and assimilated quite rapidly into the national, Hispanic-American culture; (2) comparatively stable native communities have experienced more gradual acculturation.

Since the Conquest, large numbers of individuals have left their native communities to become a somewhat mobile, national proletariat that is integrated with the Europeans in a condition of economic and social interdependence. Their dislodgement from the native communities has several causes; work as servants to the Whites (the yanaconate), mine labor, service in the army, the rewards of various new types of production in the urban centers, and the loss of their own lands. The last, and perhaps the most important, factor was brought about by: the early wars; new types of land use, especially cattle raising, which crowded out part of the dense farming population; complication of legal titles to land; increase of the native population; and the introduction of individualized land ownership and cash crops, which frequently led to land sales. Some of the detached persons became farm workers (colonos) on the haciendas and either were rapidly Hispanicized through the efforts of the landlords, or simply lost their Indian features without commensurate gain. Increasing numbers, however, have become urbanized and, though retaining some Indian culture, they wear European dress, work for wages, can read and write, and are geared to the national socioeconomic system through a national consciousness and a sense of solidarity.

The main reservoir of Indian life in the modern Andes is the community (comunidad or ayllu), which has remained relatively intact, except that during the Colonial Period its size was increased through the system of reductions (reducciones) to facilitate administrative control and religious proselytization of the Indian. In Perú and Bolivia, there are 3,000 such communities today, each with about 500 persons. Their patterns, despite a considerable content of Spanish elements, retain many of the principal characteristics of the native folk culture (Handbook, 2: 441): production mainly for local use, though always some surplus crops for sale; native methods of cultivation; exchange of labor with community members (aine); Indian garments, houses, and other material items; *Quechua* or *Aymara* speech, though much bilingualism; inability to read; local control of matters not of national concern; the extended family as the principal sociological unit; community solidarity expressed through village endogamy, local ceremonies, shrine (huaca) worship of local deities, especially those of mountains; and practice of shamanism and magic. Goods are exchanged at periodic markets, which may represent the resurgence of a pattern that was somewhat suppressed under the *Inca* control of production and distribution.

As the national economy expands, as education is extended, and as transportation brings the remoter rural areas into contact with the more advanced centers, the Indian communities are being gradually transformed. Almost all land is now individually owned, facilitating its loss through sale. The sale of land together with limited living space is breaking down the patrilineal, extended family, because new generations tend to bud off and become independent. This in turn weakens the community. Cash crops are introducing a money economy and greater use of manufactured goods. Special industries also augment community income and promote urbanization. Many non-Indian communities are incorporated and have producers' and consumers' cooperatives. Bilingualism is increasing. Formal education is introducing the national culture and a national consciousness.

Year by year, individuals who have been dislodged from their communities and even whole communities gradually pass from the category of Indian to that of national Ecuadorian, Peruvian, and Bolivian. The process of mestizaje, or assimilation to the national culture, seems likely to accelerate.

## HISTORICAL SUMMARY

The first Indians reached America from Siberia some 15,000 to 20,000 years ago and eventually spread southward into South America, arriving in Tierra del Fuego not less than 3,000 to 5,000 years ago. Their original culture included fire making; flint chipping; spears; scrapers; skin dressing; birth, puberty, and death observances; shamanism; and perhaps various ritual elements. In the course of time, bows, harpoons, nets, traps, and other material items and various ritual and social elements were acquired in different areas. At no time, however, did the early hunters and gatherers have a uniform sociopolitical pattern. The extremely great local differences in environments, natural resources, and subsistence techniques imposed upon the population of each region the necessity of grouping itself and behaving in very different ways. Some were dispersed in conjugal family groups; others were nucleated in extended families, which were patrilineal or matrilineal, sedentary or nomadic, and permanent or temporary according to the socioeconomic activities required in each area. A few, where local abundance of food permitted unusually large population aggregates, were grouped into loose bands consisting of several conjugal families or of extended matrilineal or patrilineal families. The Marginal tribes encountered at the Spanish Conquest probably give an idea of the general variety of early ecological adaptations and sociopolitical types, but it is certain that all of these have changed over the years as new weapons and transportational facilities introduced new subsistence patterns and as the peoples migrated or were pushed into new environments.

The domestication of a considerable number of native American plants was begun several thousand years ago, certainly before trans-Pacific voyages could have taken place. By 500 A. D., and probably 1,000 years earlier, more than 30 of these were grown in the Central Andes, and some of them had reached the limits of their genetic variability. They became the basis of a large, stable population in the Andes, which, in its earliest known manifestations, the Chavín Periods,[7a] had already attained mature esthetic, social, and political patterns, and, by the Early Periods possessed all essential technologies and refinements of material culture. It had a class-structured society, organized warfare and human-trophy taking, a priest-temple-idol cult, and excellent loom weaving, ceramics, metallurgy, basketry, architecture, and transportation.

It is postulated that a culture, called the Formative Period culture and possessing the general features of the Central Andean Early Periods, extended northward to México. The region of its ultimate origin is not known, but it might have been in South America. The archeological and ethnographic cultures of the Circum-Caribbean area represent a more specific formulation of the Formative Period culture, but the specific features link them most closely with the Andes and indicate a predominant northward flow of culture. It is pos-

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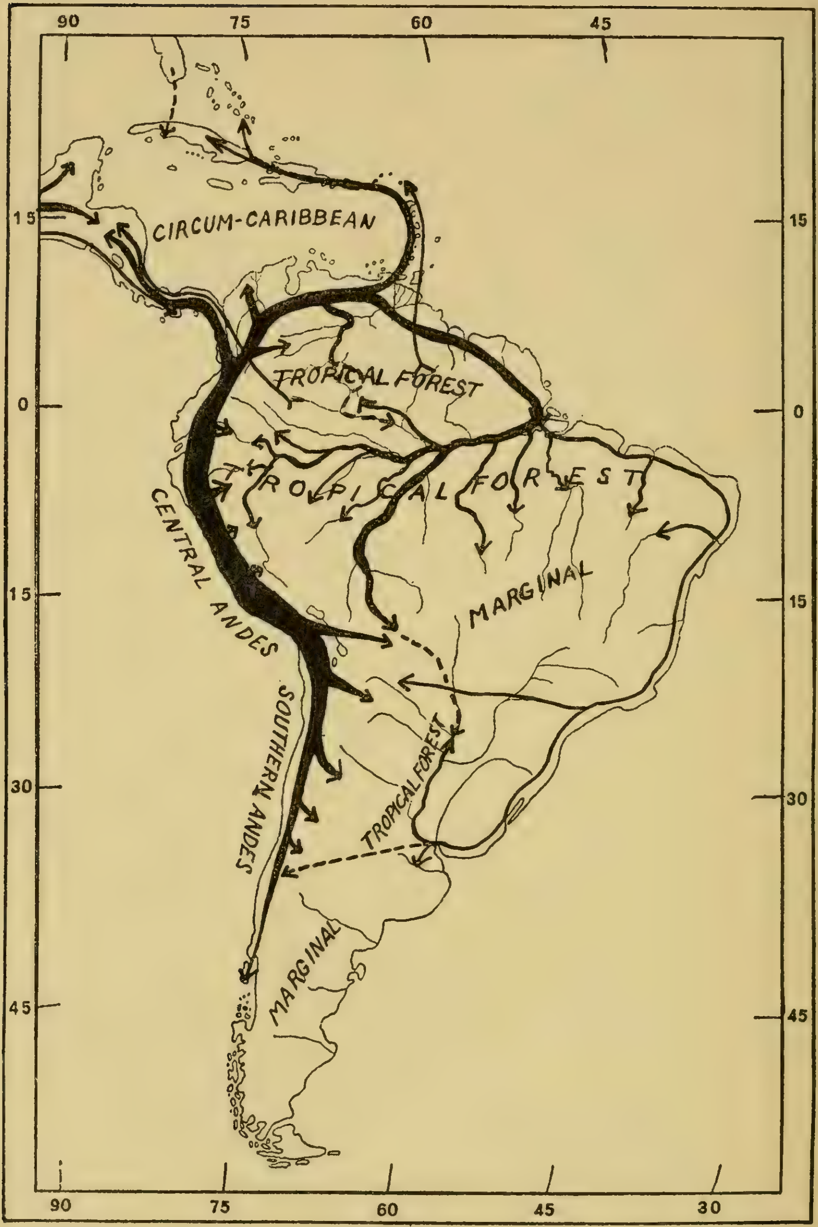
[7a] See footnote 6, p. 753.


90
75
60
45
30
15
0
15
30
45
CIRCUM-CARIBBEAN
TROPICAL FOREST
TROPICAL FOREST
CENTRAL ANDES
MARGINAL
SOUTHERN ANDES
TROPICAL FOREST
MARGINAL

Map 22.—Main routes of historical spread of pre-Columbia South American cultures.

sible that the Circum-Caribbean cultures were more like those of the Central Andes at some early period than at the Conquest, by which time they may have lost certain elaborations.

The general cultural tradition represented by the Circum-Caribbean tribes spread southward from Venezuela, probably down the Coast of the Guianas to the Amazon, and up the main tributaries of the Amazon (map 22; compare with maps 2 and 3). The sociopolitical and religious patterns and metallurgy, however, were largely lost, and only ceramics, weaving, and basketry survived. Even some of the technological traits dropped out toward the headwaters of the Amazon. The tribes of the Northwest Amazon and some of those in the Montaña and the southern part of the Amazon Basin remained Semi-Marginal. In the more remote localities on the Amazon headwaters and between the major rivers, beyond the effects of this cultural diffusion, the tribes remained Marginal. The Marginal and Semi-Marginal peoples form an almost continuous area that extends like a great U around the Amazon Basin, from the Amazon-Orinoco watershed south through the Montaña and east across parts of eastern Bolivia and Mato Grosso to the Highlands of eastern Brazil. The U is broken mainly in the upper Madeira River region in eastern Bolivia, where Tropical Forest tribes pushed southward, meeting other Tropical Forest peoples who had followed the rain forests down the coast of Brazil and inland to Paraguay and beyond.

Thus, it may be postulated that a single great historical tradition originating from the Andes in an early period carried sociopolitical and religious patterns and a developed technology from the northern Andes into Central America and almost entirely around the Caribbean Sea where it became somewhat adapted to sea coasts. It almost completely failed to penetrate the Tropical Forests directly from the Andes. Instead, the technological traits were carried by seacoast and riparian peoples down the Guiana coast and up the Amazon, and they are absent beyond the areas of easy navigation.

In the southern Andes, the technological, material, and ritual patterns spread south to the *Araucanians*. Traces of Andean influence, perhaps even of sociopolitical patterns, may have reached the eastern Chaco, despite intervening Marginal tribes, and there blended with Tropical Forest influence from the coast of Brazil.

In its main outlines and element content, this development and flow of culture was indigenous to America. It is not impossible that a number of isolated elements reached America from the Pacific. It does not really matter, however, whether blowguns, lime chewing with a narcotic, bark cloth, a few domesticated plants, and even such things as frame, thatched houses were native to America. They were incorporated into various local patterns which they affected little if at all. The basic patterns, in fact, seem to have been established, perhaps in Perú, though quite possibly elsewhere, well before any trans-Pacific voyages could have been made.

After the Spanish Conquest, the Marginal tribes rapidly disappeared, except in the more inaccessible areas. Lacking a vigorous culture before the Conquest and vulnerable to European contacts afterward, the tribes of the Brazilian coast, of southern Argentina, of the Chilean Archipelago are virtually extinct, and they have left little cultural or racial imprint on the modern population. The greatest survival of Indians with a native, but not precisely pre-Columbian, culture is around the periphery of the Amazon Basin. It is solely a question of time, however, before these, like the other Marginal peoples, lose their Indian characteristics.

The Tropical Forest tribes disappeared as cultural entities along the coasts and navigable rivers, partly because they were absorbed or overwhelmed by Europeans, partly because they were not adaptable to slave labor under the European pattern, so that Negro slaves were imported to replace them. They have, however, left a strong racial strain and even many culture elements in the modern population.

The Circum-Caribbean tribes have become virtually extinct in the Antilles, but many survive in the portions of Venezuela, Colombia, and Central America which are unfavorable for White settlement. The loss of the class system, the war complex, the religious cult, and the technological refinements has deculturated them to a Tropical Forest level.

# GLOSSARY

## CERAMICS

The following list was compiled by Dr. Gordon R. Willey and Dr. Irving Rouse. The Spanish equivalents, where such are in common usage, were supplied by Dr. George Howard. The list includes only the more general terms for construction, forms, and decoration. The dozens of terms applying to wares of only local interest are not included.

**Adorno.** See **Lug.**

**Annular base (base anular).** A raised, approximately cylindrical rim on which the vessel rests. When of extreme height, it is called a pedestal base.

**Appliqué.** See **Filleting.**

**Basket construction.** Building up the clay vessel within a woven basketry container.

**Beaker.** A vessel which has straight, parallel sides and a height that exceeds the diameter.

**Bowl (bol, escudilla, puco).** A vessel which is wider than tall and which has a large orifice.

**Brushing or combing.** Decoration applied before firing by combing or brushing the wet surface of the vessel with a comblike or brushlike instrument.

**Champlevé.** Decoration applied before or after firing by cutting the vessel surface and carving out portions of it.

**Coiling (procedimiento de construcción del rodete).** Forming the clay vessel by spiraling wet strands of clay to build up the shape desired. Sometimes other annular methods were used instead of continuous coiling.

**Coil obliteration (alisamiento de rodete).** Obliteration of the lines of coils by smoothing, scraping, or annealing them together before the vessel is fired in order to obtain a smooth surface.

**Collar (cuello).** A convex section of the vessel wall surmounting a shoulder or neck.

**Combing.** See **Brushing.**

**Corrugations.** Lines of coiling which have been intentionally left unobliterated.

**Direct molded or shaped (modelado).** A clay vessel formed by manipulating the clay mass or lump with the hands; coils are not used.

**Dish or plate (plato).** A shallow, open bowl.

**Double-vessel (vaso doble).** Usually, a vessel having two compartments which have an internal connection.

**Effigy adornos.** Life or idea forms affixed to the vessel.

**Effigy vessels.** Vessels which have been shaped to represent some life or idea form.

**Engraving.** Decoration after drying or after firing by scoring the vessel surface.

**Fabric-, basket-, or net-impressed (impresiones de textiles, de canasterías, de redes).** Decoration made before firing by pressing a fabric, basket, or net on the wet surface of the clay.

**Filleting or appliqué.** Soft strands or strips of clay affixed to the vessel surface before firing.

**Fingernail impression and finger-impression (presiones dígito-unguiculares).** Decoration before firing by impressing the wet surface of the vessel with the fingernails or fingertips.

**Firing (cocimiento).** The baking process which makes the pottery object hard and durable.

**Fugitive painting.** Painting which is applied after the vessel has been fired and which is not fixed by refiring. Such painting tends to rub off.

**Grit temper.** Sand or crushed rock used as a temper or aplastic.

**Handle (asa).** A loop-shaped strip of clay attached by each end to the vessel wall.

**Incision (incisión, decoración incisa, linea grabada).** Decoration applied before drying by scoring the wet surface of the clay.

**Inclusions.** Particles in the clay, added, whether accidentally or intentionally, as a tempering material.

**Jar.** A vessel whose height is greater than its diameter and whose orifice is constricted to less than the maximum diameter of the vessel.

**Keel.** The angle formed by the body and shoulder of a vessel.

**Linear-punctation (surco inciso con escalonamiento interior punteado).** Sometimes called punctation-incision or drag-and-jab punctation. Made by alternately pulling and jabbing a sharp-pointed instrument over the soft, unfired vessel surface.

**Lug, adorno, or nubbin.** A handle which is solid, rather than looped or projecting.

**Modeling.** Manipulation of the clay either with the hands or by means of prepared molds to give the vessel or object decorative forms.

**Monochrome painting (decoración pintada monocroma).** The use of a single color for decorative purposes.

**Neck.** An outcurving section above the body or shoulder of a bowl or jar.

**Negative design.** A negative design achieved by a positive painting technique, in contrast to the negative, lost-color, or resist-painting technique.

**Negative or lost-color painting (decoración pintada negativa).** A lost-color, resist-dye, or batik process, whereby the vessel surface is partially covered with a resistant, such as wax, and immersed in the dye, paint, or slip. Firing fixes the color but burns off the wax or resistant, leaving the areas where it had been uncolored.

**Olla.** Usually, a large, globular vessel, either of bowl or jar proportions, which has a constricted orifice.

**Oxidizing atmosphere (cocimiento en medio oxidante).** Firing or baking the vessel so that it receives an ample supply of oxygen and the clay turns a reddish color. (See **Reducing atmosphere.**)

**Paste (pasta).** The matrix, or mixture of clay and water, from which the pottery vessel or object is fashioned.

**Pedestal base.** See **Annular base.**

**Plate.** See **Dish.**

**Polished black ware.** (Sometimes called "bucchero" in Perú.) It is reduced rather than oxidized in firing, the vessel surface being blackened by smoke smudging and then polished.

**Polishing (pulimiento).** Smoothing and burnishing the dry, unfired, soft vessel by rubbing with a small, smooth stone or a stick.

**Polychrome painting (decoración pintada policroma).** The use of two or more colors for forming designs.

**Positive painting.** Direct application of pigments to the surface of the vessel, which is subsequently fired.

**Punctation (decoración punteada, punto grabado).** Decoration applied before firing by jabbing the wet surface of the clay.

**Prepared molds (técnica del moldeado).** The use of negative molds or forms, usually made of pottery, to impart the desired form or shape to a pottery vessel or object. These molds were usually employed in pairs, front and back.

**Reducing atmosphere (cocimiento en medio reductor).** A condition of firing under which the vessel or object receives an insufficient supply of oxygen, resulting in a greyish or blackish ware.

**Relief-modeling.** Life or idea forms modeled in relief on the vessel surface before firing.

**Rim (borde).** The lip, or finished top edge, of the vessel wall.

**Sherd (tiesto).** A fragment of a clay vessel.

**Sherd temper.** The use of ground pottery fragments as temper.

**Shoulder.** The incurving upper section of the wall of a bowl or jar.

**Slip (engobe).** A wash or dip to which a pottery vessel or object is subjected either before or after the first firing and before the final firing. The wash is usually of a different color or shade from the natural color of the clay, and it serves as a background for any painted designs that may be applied.

**Simple or open bowl.** A bowl which has its maximum diameter at the orifice.

**Spout (gollete).** An elongated, tubular orifice.

**Subglobular bowl (vaso subglobular).** Bowl which is a flattened sphere. The maximum diameter is greater than the orifice and is somewhere near the mid-point of the height.

**Temper (degraissant, Fr.)** The aplastic, or hard particles, added to the paste to increase or decrease its cohesive qualities.

**Tripod base (base trípode).** Three feet, nodes, or projections to support the vessel.

**Three-color negative painting.** This refers to vessels decorated in three colors: the natural color of the clay; the paint or slip, which brings out the design in negative; and the third or final color, which is applied positively. It is really a combination of negative and positive painting.

**Tripod base (base tripode).** Three feet, nodes, or projections to support the vessel.

**Urn (urna).** A large, deep vessel, generally jar-shaped, which is used for purposes of burial.

## BASKETRY AND WEAVING

**Amazon loom.** See **Loom.**

**Andean spindle.** See **Spindle.**

**Appliqué.** Related to embroidery techniques. Shaped pieces of material contrasting with the ground material, usually fastened to it with decorative stitchery.

**"Arawak" loom.** See **Loom.**

**Backstrap loom.** See **Loom.**

**Bacaïri spindle.** See **Spindle.**

**Batik.** A form of reserve technique involving a resist material such as wax, which is applied over the surface to be protected against absorbing the dye. When removed, the reserved areas are the original color of the fabric or the color given it by a previous dyeing. Several colors in the same piece are possible.

**Batten.** Synonym for **Sword.** A shaped length of hardwood, often wide and heavy. As verb, batten means to press or beat down to the working edge the weft element put through the space created in the warp plane.

**Bobbin.** A tool used in weaving on small two-bar looms. Long, very slender stick or other object. Weft is wound around the bobbin.

**Bororo spindle.** See **Spindle.**

**Braiding.** See **Plaiting.**

**Braidwork.** See **Plaiting.**

**Brocade.** Superstructural form of patterning. While the material is still on the loom, the weaver introduces supplementary decorative yarns to build up designs. Brocaded motifs often are confused with similar effects gained through embroidery with needle. **Single-face brocading** is procedure by means of which decorative yarns show in much greater amounts on the surface than on the reverse side of the fabric.

**Carding.** A combining process preliminary to spinning, during which loose fibers are laid more or less parallel to each other. Hand tools employed are called cards.

**Chain twists.** Roth's term for **Twining,** q. v.

**Checker weave.** In some basketry and matwork the warp and weft elements are equally wide. When these are systematically interlaced in over-one-under-one order, result is similar in appearance to a checkerboard.

**Coiling.** Many varieties used in basketry. The simplest consists of single foundation elements spiralling from bottom to mouth of the basket. Encircling this element are vertical stitches often concealing the foundation. Each stitch on the working row interlocks in some way with the foundation element below it. Coiled basketry is also known as sewn in contradistinction to woven. The **Fuegian half-hitch coil** is identified by a half-hitch taken around the coil. Each successive spiral of the foundation element is lashed to the one underneath it by a row of half-hitches inserted through the lags of those on the preceding row with the aid of an awl. A special Fuegian form is known as **Wrapped or knotted half-hitch. Coiling (or half-hitch) without foundation** consists of a series of half-hitches or buttonhole stitches; those in the first row are taken over a foundation, those in each successive row interlocking into the stitches on the row immediately above (figs. 15, 16).

**Cotton bow.** A device similar in appearance to the ordinary bow. Loose fibers in a lap of cotton or wool are fluffed by repeatedly snapping the bowstring on them (fig. 26).

**Crocheting.** A single-element technique by means of which a looped fabric is made from a thread of indefinite length with one or more hooks.

**Damask weave.** A single-face or double-face fabric with design developed by lengths of warp or weft elements on the surface of the fabric. In contrast to brocade, no decorative yarns are introduced, but basic elements are so manipulated as to form both the structure of the cloth and the patterning.

**Distaff.** A wooden object in various shapes over or around which prepared fibers are placed to be within convenient reach of the spinner (pl. 24). One *Quechua* distaff is similar to an inverted horseshoe mounted on a short handle.

**Double-ply cord.** See **Single-ply.**

**Drop spindle.** See **Spindle.**

**European loom.** See **Loom.**

**Felting.** Synonymous with fulling or shrinking. Moisture and pressure applied to a mat of loose wool fibers condenses it to form a fabric.

**Finger looping.** A form of single-element technique in which an indefinite length of yarn is so manipulated as to construct meshes without knots (fig. 39).

**Finger weaving.**—Also called "freehand" and "pick-in" weaving. The elements are interlaced with no aids other than the fingers or small pointed sticks.

**Float.** A skip of the warp or weft element over two or more of the opposite system of yarns. This leaves certain predetermined yarns free of binders for a longer or shorter distance on the surface of the cloth in order to build up the pattern motif.

**Frame.** A contrivance for holding the warp skein at tension. A frame, unlike the true loom is not equipped with a heddle or other warp-lifting device.

**Foundation element.** See **Warp element.**

**Fuegian half-hitch coil.** See **Coiling.**

**Ghiordes knot.** See **Pile weave.**

**Half-hitch.** Same as buttonhole stitch in embroidery. With one end of the cord at the left, the other end (or threaded needle) is made to encircle the object (or edge of material in sewing) and come up through the loop thus formed.

**Half-hitch coil.** See **Coiling.**

**Half-hitch without foundation.** See **Coiling.**

**Hand cards.** Two flat rectangular pieces of wood that are skin covered and studded with short lengths of steel or wire. They are presumably European in origin. When the cards are pulled over each other, the loose fibers placed between them are cleaned and straightened.

**Heddle.** On a two-bar loom, the slender rod or stick from which depend string loops to encircle alternate warp elements. All heddle-controlled warps can be raised together.

**Hexagonal weave.** In the simplest form, the weaving elements progress in three directions: horizontally, obliquely upward to the right, and obliquely upward to the left (fig. 14; pl. 20).

**Ikat.** A Malay word meaning to knot, to bind, to tie around; applied to the weaving of yarns patterned by reserving the original or first-dyed color. This is done by tying protective bindings around groups of yarns prior to arranging them on the loom bars.

**Interlocking tapestry technique.** See **Tapestry.**

**Interwoven patterns.** Accomplished by the weaver during construction of the cloth, while still on the loom.

**Kilim.** See **Tapestry.**

**Knitting.** A single-element technique by means of which a looped fabric is made from a strand of indefinite length with the aid of two, four, or more wooden or metal needles (fig. 39).

**Knotted half-hitch.** See **Coiling.**

**Knotless netting.** A single-element technique. A variety of patterns are developed by means of making row on row of loops. The half-hitch, or coil without foundation, is fundamental to most types (fig. 40).

**Lattice weave.** See **Hexagonal weave.**

**Loom.** A contrivance for holding the warp skein at tension. It is equipped with a heddle of some type. The presence of a heddle distinguishes the true loom from the **Frame.** The so-called **Arawak** or **Amazon loom** is a two-bar loom supported by upright poles; warp elements are wound around the bars in the form of a ring. The finished web may be a seamless band of cloth or a rectangular piece twice as long as the distance between the bars (figs. 27, 30; pl. 26). The **Backstrap loom** is a two-bar loom, the lower end of which it attached to the weaver's waist, the upper end to a tree or other support. This is also called a Peruvian belt, girdle-back, or stick loom (figs. 28, 31; pl. 25). The **European loom** is a foot or treadle loom with from two to four harnesses controlling as many divisions of the warp elements. The harness in treadle-loom weaving serves the same purpose as the heddle on a backstrap loom (pl. 25). The **Rio Ucayali loom** has the shape of a lyre, oval, V etc. Two end bars are lashed in position across the opening. Fabrics from Ucayali looms may be woven, twined, plaited, or otherwise fabricated (pl. 26).

**Loom bars.** These are the proximal and distal end bars of a backstrap loom. The warp skein is bound or slipped over them.

**Loop plaiting.** A term used by Roth (1924, figs. 19, 20) to distinguish the technique used for making three-dimensional cords.

**Matwork.** Closely woven, flat, four-selvage rectangles in checker weave or twilling of the over-one-under-three type.

**Negative patterning.** The design motif in the original color of the cloth on a dyed or painted background of contrasting color, sometimes achieved by scraping away the paint or other colored substance to form the pattern. The methods differ. See **Batik** and **Ikat.**

**Netting.** A single-element technique in which a succession of loops are kept in position by knots. Tools include a mesh gage and a device known as a netting needle, which holds an indefinite length of cord.

**Open weave.** See **Hexagonal weave.**

**Pattern stick.** Term used to designate small round stick (or several) inserted under certain warps or series of warps in order to segregate them for the pattern. Each stick acts as a warp-lifter, making an opening through the warp plane for the line of weft.

**Peruvian loom.** See **Loom.**

**Pile weave.** The form recorded for the *Araucanians* consists of short lengths of yarn knotted around pairs of warp elements, as in Turkish carpets. The knot is called the **Giordes knot** (fig. 33).

**Plain weave.** Simple cloth weave; over-one-under-one interlacing.

**Plaiting.** Synonym for **Braiding**; a multiple-element technique. It requires at least three strands, the number being limited only by the ability to interlace one or several as a unit with the remainder of the group. Each element is active and passive at different times. In basketry and matwork, plaiting usually connotes weaving; in cloth, the term is applied to a narrow band fabricated by a method other than weaving.

**Reef knot.** A square knot.

**Río Ucayali loom.** See **Loom.**

**Selvage.** The finished edge at the side of a breadth of cloth. It is formed by the turns of the weft around the outside warp.

**Set-up.** See **Warp element.**

**Sewn basketry.** See **Coiling.**

**Shed-stick.** A round slender or heavy bar. For weaving simple cloth, the shed-stick serves to divide the entire plane of warp elements into two equal parts for the passage of a line of weft between them. Warps passing beneath the shed-stick are raised by means of the heddle rod with its pendant loops.

**Single-face brocading.** See **Brocade.**

**Single-ply.** The basal twisted strand as it comes from the spindle or other spinning device. **Double- or two-ply cord** represents a combination of two singles or the folding in half of one single to form a heavier element.

**Single-twine technique.** See **Twining.**

**Slit tapestry.** See **Kilin tapestry** under **Tapestry.**

**Spindle.** A slender, round, pointed stick from 8 to 18 inches in length. Near one end is the whorl, a disk, or a ball, which steadies the motion when the spindle is twirled. The **Drop spindle** (so-called **Andean** or **Bacaïri spindle**) may have a hook, notch, or small slit at one end. The supported spindle (so-called **Bororo spindle**) is smaller in diameter and has a ball-like whorl. To set this spindle in motion, the spinner rolls the end of it under the palm of her hand on the block forming one of the supports.

**Spiraling weft.** See **Wickerwork.**

**Structural decoration.** Design motifs or patterns, like stripes, which are built up during the actual weaving of the cloth on the loom or, in basketry, during the making of the basket or mat.

**Surface decoration.** Patterning or objects applied after the basketry or cloth has been completed. Paint, knotted strings, feathers are among the forms occurring. (Plate 18.)

**Sword.** See **Batten.**

**Tapestry.** Variation of simple plain or twill weaves to be identified by pattern motifs of weft yarns battened together so closely as to conceal the warps. In **Interlocking tapestry technique** wefts of adjoining color areas turn around a common warp or they turn around each other in the space between two warps. In **Kilim tapestry** the form is distinguished by slits at the edges of pattern motifs. Colored wefts of one motif turn around its edge warps; colored wefts of adjoining motifs turn around their own edge warps. The slits left between the motifs may be short or long.

**Tenter.** A stick placed just behind the working edge of a fabric. Cloth edges are affixed to the stick in order to maintain uniform width of the fabric.

**Thigh spinning.** Yarn twisted without a tool. The spinner rolls a small flat strand of fibers down his bare thigh with the palm of his hand.

**Thread count.** The number of warp and weft elements per unit of measurement, usually per square centimeter or inch.

**Three-element weaving.** See **Hexagonal weave.**

**Twill or twilling.** Simple weave characterized by diagonal lines formed by the intersection of warp and weft floats. Ordinary hand-woven twills have four warps and four wefts in the unit. These divide as one-and-three (uneven) and two-and-two (even) twills. In basketry, twilling produces geometric motifs, frets, and other patterns built up of straight lines (pls. 18, 19, 20, 23; fig. 13).

**Twining.** A finger technique in which two elements are twisted about each other frequently enclosing a third element within each twist. Also called single twine and chain twist (fig. 38; pl. 17).

**Two-element interlacing.** Wickerwork, checkerwork, and twilling are three simple techniques, each requiring only two elements comparable to the warp and weft systems in cloth weaving.

**Warp element.** In woven basketry terminology, synonymous with **Foundation element.** In cloth weaving, a single thread or cord extending from one end bar of a loom to the other. The complete series of warps is called the **Warp skein,** the **Warp plane,** or the **Setup.**

**Warp floats.** See **Float.**

**Warp patterning.** Motifs produced by raising certain warps to form unbroken lengths on the surface of the fabric. Weavers on primitive looms use only the fingers or small sticks as warp lifters.

**Warp plane.** See **Warp element.**

**Warp skein.** The continuous length of warp yarn wound around stakes or bars preliminary to weaving.

**Weaving.** The interlacing of two systems of elements, the warp and the weft, at right angles to each other. Cloth weaving requires the use of a frame or a loom to hold the warp system taut.

**Web.** A completed textile fabric or one under construction on the loom.

**Whorl.** A discoidal or small spherical object mounted on the spindle stick to give steadiness to its whirling motion.

**Wicker.** Plain over-one-under-one weaving in basketry. The warp element is usually heavy and rigid in contrast to slender, flexible weft element. Wickerwork for special uses, such as fishing gear, may be woven with the weft element spiraling upward from bottom to mouth of the trap.

**Wrapped or knotted half-hitch.** See **Coiling.**

## METALLURGY

The following list was prepared by Dr. William Root:

**Alloy.** A homogenous mixture of two or more metals, usually made by melting them together.

**Amalgam.** An alloy of mercury and some other metal.

**Anneal.** The process of heating a metal to a high temperature for some time and then slowly cooling it. This makes the metal softer and less brittle. See **Temper.**

**Brass.** An alloy of copper and zinc.

**Bronze.** An alloy of copper and tin.

**Casting.** The process by which an object is made by pouring molten metal into a mold and allowing it to solidify.

**Cire perdue process.** This is a special method of preparing a mold for casting. A wax model of the object to be cast is made. This is coated with moist clay which is allowed to dry. The wax is then melted and poured out leaving a mold of the desired form.

**Coloring** (of a metal). The process by which a metal surface is made to assume a different color than the original metal. The color comes from some constituent of the metal itself. See **Mise en couleur.** Not to be confused with **Gilding.**

**Density.** The weight of a unit volume of a material. It is usually expressed as grams per cubic centimeter.

**Ductility.** The quality of being capable of being permanently drawn out into wire or of being hammered into a thin sheet without cracking. See **Malleability.**

**Electrum.** An alloy of gold and silver.

**Emboss.** To decorate a metal surface by raised designs. See **Repoussé.**

**Engrave.** To decorate an object with a design scratched into the surface.

**Eutectic.** The alloy that has the lowest possible melting point with the given components.

**Forging.** To hammer heavy metal.

**Gilding.** To apply gold leaf, etc., to a surface. See **Coloring.**

**Guanin.** See **Tumbaga.**

**Hardness.** The resistance of a substance to denting or scratching. It is usually measured on an arbitrary scale. The Brinell hardness number is the commonest, and is measured by the indentation effect of a hard ball pressed into the surface of the metal to be tested.

**Malleability.** The quality of being capable of being hammered into thin sheets without cracking. See **Ductility.**

**Metal.** A substance with metallic properties. It may be a native metal or an alloy.

**Mineral.** A naturally occurring compound, usually of a metal. See **Ore.**

**Mise en couleur.** On treatment of a copper-gold alloy with acid, the copper is removed from the surface and the gold is left. On burnishing, the surface appears to be of gold. This is an example of **Coloring.**

**Native metal.** Metal that occurs in nature in the free state. The common examples are gold, silver, and copper.

**Ore.** A naturally occurring metal or mineral usually mixed with impurities.

**Refining.** The purification of a metal.

**Repoussé.** A design in relief on a metal sheet beaten or pressed up from the reverse side.

**Smelting.** The process of winning a metal from its ores by heating the ore with a substance like charcoal to a temperature above the melting point of the metal. Sometimes used in the sense of melting or fusing.

**Solder.** To join together two pieces of metal by means of a third substance (the solder). The solder is usually a lower melting metal or alloy. When the solder melts, it alloys with the metal along the two edges and on cooling forms a firm joint.

**Tempering.** To bring a metal to a proper degree of hardness and toughness, usually by heating and cooling more or less quickly. See **Anneal.**

**Tensile strength.** The force required to pull apart a substance. It is usually expressed in pounds per square inch or in kilograms per square centimeter.

**Tumbaga.** An alloy of gold and copper. Also called **Guanin.**

**Weld.** To join together two pieces of metal either by (1) melting the edges together (autogenous welding), or (2) hammering or pressing together the overlapping edges while heated almost to their melting point (forge welding)

## SOCIAL AND RELIGIOUS TERMS

Ethnology has a growing vocabulary of special terms, and each is gradually acquiring a finer shade of meaning. Some day, it will be worth while to compile a dictionary of such terms. For the present, there is too much variation in their use by individual scientists to permit standardization.

The following list selects only a few of the more common terms, especially those which, being adopted from one language into another, have taken on new meaning. The very word "anthropology" is an example of changed meaning. In South America, anthropology, following European usage, signifies what "physical anthropology" means in North America. "Anthropology" in North America has come to be an inclusive term, covering archeology, ethnology, and physical anthropology. The definitions given below are not attempts to fix the meanings of these terms, but, in the interest of international intelligibility, to indicate their meanings in the Handbook, and in North America.

**Clan.** Used both as a synonym for sib (see Sib) and as a term to distinguish a matrilineal sib from a patrilineal sib.

**Couvade.** Literally, this means that the father goes to bed and observes other restrictions as if he rather than the mother had borne the child. In usage, it has come to mean that the father no less than the mother is restricted in his behavior after childbirth because native belief holds that his behavior will affect the child. Thus, terms such as semicouvade, meaning that the father is only somewhat restricted in his behavior, have come into use.

**Endogamy.** The custom that one marry inside the group, for example, community, moiety, etc. The clan, however, is usually though not always, exogamous by definition.

**Exogamy.** The rule that one must marry outside the group, for example, the clan, moiety, band, community, etc.

**Folklore.** This term tends to have different, though not mutually exclusive, meanings in North and South America. In North America, it is used principally for folk tales, though it also includes folk beliefs and customs, and mythology. In South America, it signifies the folk beliefs and customs, especially of contemporary, backward peoples, and its meaning is often so broad as to be almost synonymous with "ethnography" in the North American sense.

**Gens.** A patrilineal sib.

**Guardian spirit or spirit helper.** A supernatural being, such as a plant, animal, or other spirit, which is associated with and assists a particular person. By contrast, a god is a supernatural being which is associated with and assists a community, tribe, or nation.

**Lineage.** The descendants of one pair of ancestors, through either the male or female line.

**Medicine man.** See **Shaman.**

**Moiety.** One of dual divisions of a tribe or sociopolitical unit. The term has two definitions: (1) a division of the unit into two groups for games, reciprocal burial rites, ceremonies, and other such purposes; (2) one of two exogamous divisions. Exogamous moieties may be subdivided into clans.

**Phratry.** One of three or more tribal divisions which are usually exogamous and which are subdivided into clans or sibs. If there were only two such divisions, they would be called moieties.

**Priest.** The intermediary between the people and their gods. In contrast to the shaman, the priest lacks a personal spirit helper and conducts rites and group ceremonialism for the tribal god. An individual may, however, be both priest and shaman.

**Shaman.** Medicine man (curandero). A person whose power is based on his personal control of supernatural forces, usually guardian spirits. He diagnoses and cures disease, works magic, prognosticates, and often has supernatural control over other phenomena.

**Sib.** An exogamous group. (See also **Clan** and **Gens.**) This term may be applied to: (1) a lineage, i. e., a group of relatives in the male or female line, who live together in one place and take their spouses from other groups; (2) a group of persons descended through the male or female line, who may be scattered and cannot trace their relationship to one another but who believe that they are descended from the same ancestor and marry outside the group.

**Spirit helper.** The supernatural being which the shaman or medicine man uses as his agent in causing and curing disease and working other magic. The spirit is usually acquired through a dream or vision, which is sometimes produced by narcotics or other means.

**Totem.** A spirit, as of a plant, animal, or other phenomenon, believed to have a special relationship to a group, such as a clan or moiety. It is contrasted to the individual's guardian spirit and the tribe's god. The relationship of the totem to the group is extremely varied, and many shades of meaning have been attached to "totemism."

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| Agric. Journ. British Guiana | Agricultural Journal of British Guiana. Georgetown, British Guiana. |
| Amer. Anthrop. | American Anthropologist. |
| Amer. Antiq. | American Antiquity. |
| Amer. Indíg. | America Indígena. México, D. F. |
| Amer. Journ. Sci. | American Journal of Science. New Haven, Connecticut. |
| An. Bibl. | Anales de la Biblioteca Nacional. Buenos Aires, Argentina. |
| An. Inst. Etnogr. Amer. | Anales del Instituto de Etnografía Americana. Mendoza, Argentina. |
| An. Mus. La Plata | Anales del Museo de La Plata. La Plata, Argentina. |
| An. Mus. Nac. Buenos Aires | Anales del Museo Nacional de Buenos Aires. Buenos Aires, Argentina. |
| An. Real Acad. Cienc. Méd. Fís. Nat. Habana. | Anales de la Real Academia Ciencias, Médicas, Físicas y Naturales de la Habana. Havana, Cuba. |
| An. Univ. Chile | Anales de la Universidad de Chile. Santiago de Chile. |
| Ann. Med. Hist. | Annals of Medical History. New York, N. Y. |
| Ann. Rep. Bur. Amer. Ethnol. | Annual Report of the Bureau of American Ethnology, Smithsonian Institution, Washington, D. C. |
| Ann. Rep. Smithsonian Inst. | Annual Report of the Smithsonian Institution. Washington, D. C. |
| Anthrop. Pap. Amer. Mus. Nat. Hist. | Anthropological Papers, American Museum of Natural History. New York, N. Y. |
| Anthrop. Publ. Univ. Pennsylvania Mus. | Anthropological Publications, The University Museum, University of Pennsylvania, Philadelphia, Pa. |
| Anthrop. Ser. Catholic Univ. Amer. | Anthropological Series, Catholic University of America. Washington, D. C. |
| Anthropos | Anthropos, Ephemeris Internationalis Ethnologica et Linguistica. Salzburg and Vienna, Austria. |
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| Archiv. Anthrop. Völker. Kol. Kultur. | Archiv für Anthropologie und Völkerforschung und Kolonialen Kulturwandel. Brunswick (Braunschweig), Germany. |

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| Archiv. Gesch. Med. | Archiv für Geschichte der Medizin. Leipzig, Germany. |
| Archiv. Mus. Nac. Rio de Janeiro. | Archivos do Museu Nacional. Rio de Janeiro, Brazil. |
| Art and Archaeology | Art and Archaeology; the Arts throughout the Ages. Archaeological Institute of America. Baltimore, Md.; Washington, D. C. |
| Baessler-Archiv | Baesssler-Archiv, Beitrage zür Völkerkunde. Leipzig and Berlin, Germany. |
| Bibl. Pedag. Brasil | Bibliotheca Pedagógica Brasileira. São Paulo, Brazil. |
| Bol. Acad. Nac. Hist. Buenos Aires. | Boletín de la Academia Nacional de la Historia. Buenos Aires, Argentina. |
| Bol. Acad. Nac. Hist. Quito | Boletín de la Academia Nacional de Historia. Quito, Ecuador. |
| Bol. Estud. Hist. Pasto | Boletín de Estudios Históricos. Pasto, Columbia. |
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| Bol. Inst. Geogr. Argentino | Boletín del Instituto Geográfico Argentino. Buenos Aires, Argentina. |
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| Bol. Mus. Nac. Rio de Janeiro. | Boletim do Museu Nacional. Rio de Janeiro, Brazil. |
| Bol. Real Acad. Hist. | Boletín de la Real Academia de la Historia. Madrid, Spain. |
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| Bull. Bur. Amer. Ethnol. | Bulletin, Bureau of American Ethnology, Smithsonian Institution. Washington, D. C. |
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| Bull. Free Mus. Sci. Art, Univ. Pennsylvania. | Bulletin of the Free Museum of Science and Art, University of Pennsylvania. Philadelphia, Pa. |
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| Col. Hist. Chile | Colección de Historiadores de Chile y de Documentos Relativos á la Historia Nacional. Santiago de Chile. |
| Col. Libr. Doc. Ref. Hist. Perú. | Colección de Libros y Documentos Referentes á la Historia del Perú. Lima, Perú. |
| Coll. Ling. Soc. Ling. Paris | Collection Linguistique, Société de Linguistique de Paris. Paris, France. |
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| Congr. Int. Amer. | Congreso Internacional de Americanistas; International Congress of Americanists; etc. |
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